Contents—May 1945

Volume XXVI No. 5

ARCHIVES OF PHYSICAL MEDICINE
(Formerly Archives of Physical Therapy)
30 North Michigan Avenue, Chicago 2, Illinois

Original contributions, exchanges and books for review should be forwarded to the Editorial Office. All business matters including advertising should be handled through the Executive Office, 30 N. Michigan Ave., Chicago 2, Illinois. The statements in the manuscripts published in the ARCHIVES OF PHYSICAL MEDICINE are made solely on the responsibility of the author. The American Congress of Physical Medicine does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in ARCHIVES of PHYSICAL MEDICINE are for exclusive publication and may not be published elsewhere.

OFFICERS

American Congress of Physical Medicine

MILAND E. KNAPP, M.D.,
Minneapolis, President.
WALTER S. McCLELLAN, M.D.,
Saratoga Springs, N. Y.
President-Elect.
*H. WORLEY KENDELL, M.D.,
Brookhaven, Miss., First Vice-President.
*O. LEONARD HUDDLESTON, M.D.
Denver, Colo., Second Vice-President.
EARL C. ELKINS, M.D.,
Rochester, Minn., Third Vice-President.
ARTHUR L. WATKINS, M.D.,
Boston, Fourth Vice-President.
ROBERT L. BENNETT, M.D.,
Warm Springs, Ga., Fifth Vice-President.
RICHARD KOVACS, M.D.,
New York, Secretary.
JOHN S. COULTER, M.D.,
Chicago, Treasurer.
WALTER J. ZEITER, M.D.,
Cleveland, Executive Director.
MARION G. SMITH, B.Sc.,
Chicago, Executive Secretary.

EXECUTIVE COUNCIL

Kristian G. Hansson, M.D., New York, *Chairman.*
*Norman E. Titus, M.D., Los Angeles, *Secretary.*
William Bierman, M.D., New York.
John S. Coulter, M.D., Chicago.
James C. Elsom, Madison, Wisconsin.
Frank H. Ewerhardt, M.D., St. Louis, Missouri.
Roy W. Fouts, M.D., Omaha, Nebraska.
John Severy Hibben, M.D., Pasadena, Calif.
Abraham R. Hollender, M.D., Chicago.
Disraeli Kobak, M.D., Chicago.
Frank H. Krusen, Rochester, Minnesota.
Fred B. Moor, M.D., Los Angeles.
Nathan H. Polmer, M.D., New Orleans.
William H. Schmidt, M.D., Philadelphia.
Frederick L. Wahrer, M.D., Marshalltown, Iowa.
Miland E. Knapp, M.D., Minneapolis, Ex-Officio.

EDITOR EMERITUS

DISRAELI KOBAK, M.D.,
Chicago.

* In Active Service.

Subscription — In the United States, its possessions, and Mexico, $5.00 yearly; Canada, $5.50; elsewhere, $6.50 the year.
Advertising rates on application. All advertising copy subject to acceptance by publication committee.
Published monthly at Chicago, Illinois, by American Congress of Physical Medicine.
Entered as Second Class Matter, February 15, 1945, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

ORIGINAL ARTICLES

Effects of Electrical Stimulation on Denervated Skeletal Muscle ..... W. H. Wehrmacher, B.A.; J. D. Thomson, Ph.D., and H. M. Hines, Ph.D. 261

Streamlined Physical Therapy and Occupational Therapy Records ..... Capt. Anthony C. Reiger, M.C., A. U. S. 267

Cryotherapy in Dermatology ..... Samuel M. Bluefarb, M.D. 270

Physical Medicine in an Evacuation Hospital ..... Lieut. Col. Willis M. Weeden, M.C., A. U. S., and Capt. Hymen D. Stein, M.C., A. U. S. 272

Reconditioning in Civilian Hospitals ..... Henry B. Gwynn, M.D. 275

The Care of Soldiers' Feet ..... Capt. Paul A. Pemberton, M.C., A. U. S. 282

Epilation. A Fifteen Year Comparative Evaluation of Electrolysis and Electrocoagulation ..... Meyer Louis Niedelman, M.D. 290

•

Medical News 297

•

Preliminary Report of the Committee on Terminology of the Society of Physical Medicine 298

•

Editorials 299

•

Book Reviews 306

•

Physical Medicine Abstracts 310

•

EDITOR OF THE MONTH

RICHARD KOVACS, M.D.

New York, N. Y.

Printed in U. S. A.

OPPORTUNITIES

WANTED—Physician qualified in physical therapy to head department; 8-man group; Middle West.

WANTED—PHYSICAL THERAPISTS FOR FOLLOWING: (a) New department now being planned by 300-bed hospital; competent administrator who could consult with architects regarding plans and specifications required; minimum, $250; Middle West. (b) Hospital for crippled children, state operated; around $2,000 including meals; East (c) Two physical therapists; 600-bed hospital, affiliated with university school of medicine; work largely orthopedic in nature; new department now being organized; East. (d) 250-bed hospital; well equipped active department; large city; Southern Michigan. (e) For physical therapy department of group long-established in Los Angeles area; department averages 20-30 patients daily; majority of patients are those recovering from injuries industrially sustained. (f) Young man qualified in physical therapy to take charge of department privately operated hospital, beautifully located in Winter resort town in Florida; interesting opportunity.

SITUATIONS WANTED

PHYSICAL THERAPY TECHNICIAN is available; B.S. degree with major in physical therapy; several years in charge of department, small hospital. For further information, please write

BURNEICE LARSON, Director, Medical Bureau,
Palmolive Building, Chicago 11, Illinois

E & J RESUSCITATOR INHALATOR AND ASPIRATOR

•

The automatic breathing machine for the treatment of respiratory failure in adults, children or the new-born.

Employed in more than 1,000 clinics and many important industrials and first aid organizations.

•

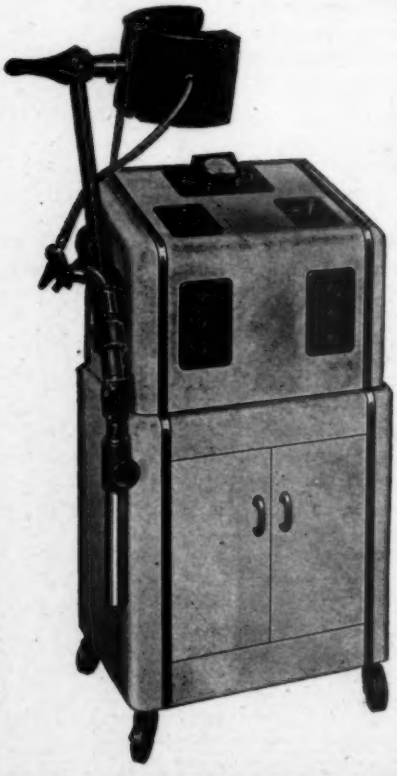
E & J MANUFACTURING COMPANY

Glendale, California

Drexel Building, Philadelphia

581 Boylston Street, Boston, Mass.

4448 West Washington Blvd., Chicago 24, Ill.



LF

SHORT WAVE DIATHERMY

MODEL SW-221
(Illustrated)

A dependable general-purpose unit featuring the adaptable HINGED Treatment Drum and providing also for pad, cuff, inductance cable and orificial applications.

MODEL SW-550
(Dual Wave)

Two circuits—Short and Ultra-Short. Provides every known diathermy treatment modality and each at its best. America's finest Diathermy Unit.

THE LIEBEL-FLARSHEIM CO.

303 West Third St., Cincinnati 2, Ohio

EFFECTS OF ELECTRICAL STIMULATION ON DENERVATED SKELETAL MUSCLE *

W. H. WEHRMACHER, B.A.

J. D. THOMSON, Ph.D.

and

H. M. HINES, Ph.D.

IOWA CITY

A survey of the literature, covering the period of more than one hundred years since Reid[1] reported his studies on the electrical stimulation of denervated frog's muscle, reveals nothing consistent concerning either the effect or the therapeutic value of such treatment on paralyzed muscle. Numerous investigators have reported that it was possible to retard the loss of excitability, mass and strength from denervated skeletal muscle by frequent electrical stimulation. On the other hand, many reports have appeared in which no significant effects of electrical stimulation were observed. The object of this investigation was to determine the precise experimental conditions under which electrical stimulation would most effectively retard atrophy and the conditions under which its use would prove to be relatively ineffective.

The studies were carried out on the gastrocnemius muscle of adult albino rats. This selection of experimental material was made because considerable information was already available concerning changes in rat's gastrocnemii after denervation[2] and because of the fact that a sufficiently large number of animals could be employed to permit statistical analysis of the findings. Bilateral denervation of the gastrocnemii was accomplished by removing a section of the tibial nerve with the animal under light ether anesthesia. The denervated muscle of one limb served as the experimental member and that of the contralateral limb as its control. Fourteen days after denervation studies were made as to creatine concentration, mass and strength of the experimental and the contralateral control gastrocnemii. This is a sufficient period of time for nonstimulated denervated gastrocnemius muscles to lose almost one-half of their mass and creatine and to suffer even greater losses in contractile strength.[3] The technics employed for measuring muscle strength have been described elsewhere.[2] Electrical stimuli were applied to the denervated muscle of one limb by needle electrodes, one in the foot pad and the other in the posterolateral aspect of the leg. In the experiments designated as "maximal stretch" the angle between tibia and femur was rigidly fixed and the foot was manually dorsiflexed on the shank. This position was maintained throughout the period of stimulation. In some experiments a lesser degree of stretch was maintained by weighting the foot with only a 20 Gm. load. In the experiments designated as "unweighted or nonstretched" the muscles were stimulated without any external force or load being applied and the limb permitted to assume an unimpeded position. Electrical stimuli were applied to nondenervated tenotomized muscle to determine the effects of the treatment under conditions which permitted little or no development of tension during the period of stimulation. The

* Aided by a grant from The National Foundation for Infantile Paralysis, Inc.

1. Reid, J.: On the Relation Between Muscular Contractility and the Nervous System, London and Edinburgh Monthly J. Med. Sc. 1:320, 1841.

2. Hines, H. M.: Thomson, J. D., and Lazere, B.: Quantitative Studies on Muscle and Nerve Regeneration in the Rat, Am. J. Physiol. 137:527 (Oct.) 1942.

muscles received volleys of stimuli for periods of either 0.5, 2, 5, 11, 22, 45, 90 or 180 seconds. The treatments were given either on alternate days, daily or twice daily. The type and intensities of electrical stimuli employed in the various experiments are indicated in the tables of data. The treatments were begun the day after operation and terminated the day preceding testing.

In order to evaluate the results of these studies properly it was necessary to conduct a number of control experiments. Unilateral strength measurement procedures were carried out on a group of animals prior to weighing to allow, by comparison of the two sides, determination of the effect of tension measurements on weight and water content. In a number of experiments determinations were made of the water content of treated and untreated muscles. As the controls are represented by the nontreated contralateral members, it was necessary to be certain that at the time of denervation the gastrocnemii of the two limbs possess equal mass and strength. The validity of this assumption was established by the results of weight and strength measurements on 35 normal animals. In addition, experiments were carried out to determine the effects of daily electrode insertion and passive extension of the muscle without electrical stimulation.

Results

Comparisons of the values for creatine concentration, strength and weight of treated muscles with those of contralateral untreated controls constitute one valid method of evaluating the relative effectiveness of different modalities of treatment. As it is possible to calculate with a very small probable error the weights of the gastrocnemii prior to denervation from the values for total body weight, it is permissible to present data on the basis of the degree of atrophy existing under any given condition and the percentage of retardation resulting from the treatment. In our experiments in which the weights of the solei were included with those of the gastrocnemii the muscle weights were found to be equal to 0.64 per cent of the body weight.

TABLE 1. — *Average Values for the Strength, Weight and Water Content of Nondenervated Right and Left Gastrocnemius Muscles.*

Condition	No of Animals	Wet Weight		Strength*		% Water	
		Left, Gm.	Right, Gm.	Left, Gm.	Right, Gm.	Left	Right
No experimentation	35	1.243	1.240	2050	2049	.....	.....
Left subjected to strength measurements; right was control	6	1.386	1.365	.....	.....	75.84	75.47

* Grams of isometric tension per muscle.

Determinations of the weight and strength of the right and left gastrocnemii in a group of 35 control animals (table 1) indicated that no significant difference existed between the two sides. The values for the wet and dry weights and water content of muscles subjected to exposure and strength measurements were not significantly different from the values found for the contralateral members which were dissected out after exsanguination but without previous stimulation. This finding makes it possible to compare the results of our experiments with those of others whose technics did not include functional studies prior to weight measurements. Studies on the water content of treated and control muscles (table 2) indicate that the greater mass of the former was not due to an increase in tissue fluid resulting from the effects of stimulation.

The results of the experiments in which different strengths of stimuli

TABLE 2. — *Summary of the Effects of Electrical Stimulation on Denervated Muscle.*

Condition of Muscle	% Water	Creatine*	Total Tension, Gm.	Tension Per Gram of Muscle, Gm.	Total Tension Body Wt.	Muscle Wt. Body Wt.
Nondenervated control	75.72	459	2,435	1,651	10.66	0.64
Stimulated, denervated	77.17	408	973	905	4.25	0.47
Nonstimulated, denervated	76.89	333	735	972	3.12	0.34

* Milligrams per hundred cubic centimeters.

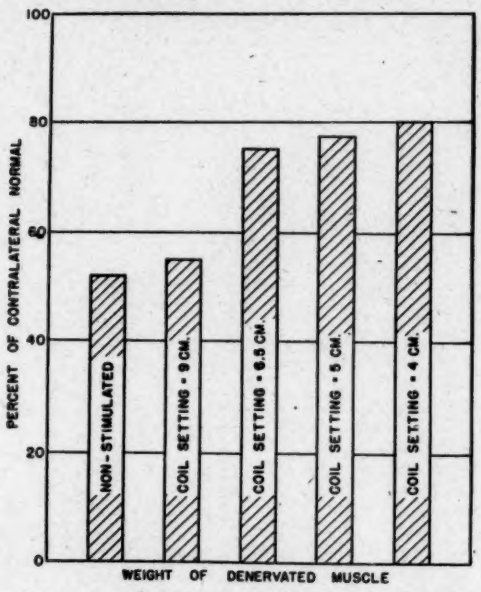


Fig. 1. — The relative effectiveness of daily treatments with different strengths of faradic stimuli.

were employed (fig. 1) show that the most effective intensity was of the order of that required to elicit maximal tension values on comparable exposed muscles. Electrical stimuli too weak to cause other than feeble contractions proved to be an ineffective means of retarding atrophy.

The importance of providing conditions, favorable for maximal tension development by the muscles during their treatments was indicated by evidence from several sources. Electrical stimulation was found to be most effective in retarding atrophy when the muscles were subjected to the maximal stretch permitted by physiologic attachments and restrained by weights in such a manner as to allow only minimal shortening during treatment. The same stimulus pattern applied to unweighted and unstretched muscles and to muscles weighted with only a 20 Gm. load, proved to be much less effective (fig. 2). Electrical stimulation failed to retard the atrophy which follows tenotomy (table 3). In this condition the freeing of the insertion makes it impossible for the muscle to develop appreciable tension. Maximal passive stretching within the range permitted by physiologic attachments was also found to be totally ineffective.

Treatments with volleys of direct current stimuli were effective in delaying atrophy but no more so than comparable periods of treatment with induction shocks (table 3). In experiments on a number of animals it was found that stimuli applied in a rhythmically interrupted pattern were of the same order of effectiveness as the same number of stimuli applied in such a way as to cause noninterrupted sustained muscle contraction.

The data show that the effectiveness of the treatment was independent

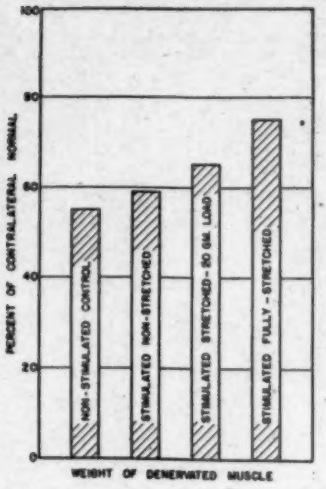


Fig. 2. — The role of load and stretch in the effectiveness of electrical stimulation.

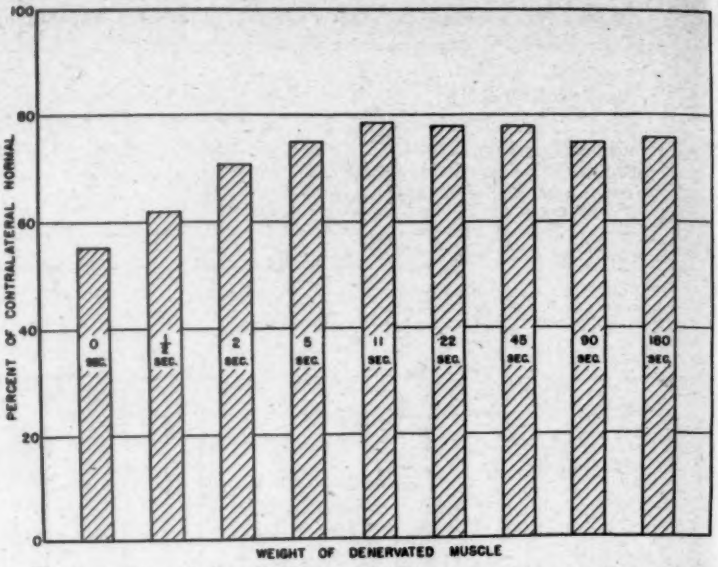


Fig. 3. — The relative effectiveness of different durations of daily treatments with faradic stimuli.

TABLE 3. — *Summary of Relative Values for Strength and Weight of Treated and Untreated Gastrocnemius Muscles.*

No. of Animals	Experiment	Nonstimulated Controls	Values for Experimental Muscles in Per Cent of Values for Contralateral Controls	
			Wet Weight	Strength
35	Nonstimulated—I	Contralateral—I	100	98
50	Nonstimulated—D	Contralateral—I	52	28
5	Electrode insertion—I	Contralatearl—I	100	99
6	Passive stretching—D	Nonstretched—D	105	94
8	Stimulated tenotomized	Tenotomized	91	110
....	Faradic stimulation ***—D	Contralateral—D	.....	.....
5	Secondary coil at 9 cm.	Contralateral—D	104	98
5	Secondary coil at 6.5 cm.	Contralateral—D	124	139
8	Secondary coil at 5 cm.	Contralateral—D	148	161
5	Secondary coil at 4 cm.	Contralateral—D	153	165
12	11 cycle faradic—D	Contralateral—D	132	130
5	Phasic* faradic—D	Continuous** tetanizing—D	101	97
6	Interrupted direct—D	Contralateral—D	129	134

I, innervation intact.
D, denervated fourteen days prior.
*, forty-five seconds of treatment, alternately one-half second stimulation and one-half second rest.
**, continuous tetanizing stimulation for 22.5 seconds.
***, Harvard inductorium.

of the length of the periods of stimulation (fig. 3) within wide limits. Daily stimulation with strong induction shocks for two seconds was essentially as effective as stimulation which lasted as long as one hundred and eighty seconds. However, a volley of stimuli delivered for one-half-second was much less effective in retarding atrophy than volleys delivered for periods of two seconds or longer. The over-all effectiveness of electrical stimulation appears to be related to the frequency with which the treatments are given (fig. 4). Thus treatments given twice a day were more effective than treatments given once a day, and the latter more effective than treatments given

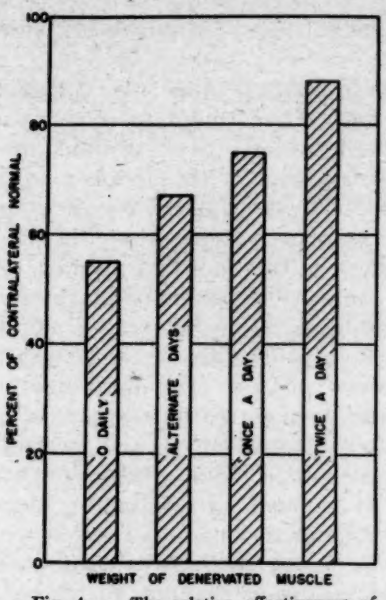


Fig. 4. — The relative effectiveness of different frequencies of treatment. The muscles were stimulated with induction shocks for twenty-two seconds.

only on alternate days. These results are in accord with the findings of Solandt, DeLury and Hunter.[3] The creatine concentration was higher in the treated animals than in the nontreated controls (table 2). This means that the delay in atrophy is associated with a retention of creatine in the muscles.

The treated denervated muscles were stronger than their controls (table 2). However, the increase in strength was due chiefly to a larger mass of contractile tissue rather than to any improvement in the functional capacity of the tissue. Electrical stimulation delayed atrophy but failed to retard the functional impairment which follows denervation.

Comment

The results of this investigation clearly indicate that the atrophy of muscle following denervation can be appreciably retarded by electrical stimulation. The effectiveness of the treatment appears to depend on the extent to which tension is developed by the muscles during their treatment. The duration of an effective period of treatment can be very short if the muscles are stimulated under conditions which permit the development of maximal isometric tension. The most important factor in treatment would appear to be the quantity of tension developed rather than the particular kind, frequency or phase pattern of the electrical stimuli. In some respects the retardation of atrophy by electrical stimulation suggests an analogy to the charging of a wet storage cell.

That electrical stimulation results in a conservation of a large mass of functional tissue is supported by the findings that such muscles possess normal water contents and increased concentrations of creatine and are stronger than their untreated controls. However, such muscles are stronger because of their greater mass rather than because of any improvement in the functional capacity of the tissue itself. Our results confirm those of Fischer[4] in the observation that electrical treatments adequate to retard at-

3. Solandt, D. Y.; DeLury, D. B., and Hunter, J.: Effect of Electrical Stimulation on Atrophy of Denervated Skeletal Muscle, Arch. Neurol. & Psychiat. 49:802 (June) 1943.
4. Fischer, E.: The Effect of Faradic and Galvanic Stimulation Upon the Course of Atrophy in Denervated Skeletal Muscle, Am. J. Physiol. 127:605 (Nov.) 1939.

rophy fail to check the gradual loss of strength per unit mass of tissue which occurs after denervation.

It is believed that these findings offer some suggestions for the selection of an effective regimen for the treatment of muscles after peripheral nerve injuries. In general, the most effective stimulus modality should be the one which causes the development of the greatest amount of tension by the muscles. The findings point out the futility of employing stimuli which elicit only feeble contractions and suggest that the effectiveness of the treatments would be independent of the kind and frequency of the electrical stimuli employed provided comparable amounts of tension were developed by the treated muscles. The muscles to be treated should be weighted or restrained in a manner which will allow the greatest amount of stretching permitted within physiologic limits. The total number of the stimuli can be small and the duration of the treatments can be very brief. Nothing would appear to be gained by prolonging the treatments beyond a certain minimal duration. On the other hand, the prolongation of the periods of treatment to the point of causing a considerable degree of fatigue in the muscles appears not to be deleterious. The effectiveness would appear to depend on the frequency with which the treatments are given. It is obvious that all of these optimal conditions cannot be realized in any given therapeutic regimen. Some modifications must frequently be made for the comfort of the patient, but when these are made it can be anticipated that less effective retardation of atrophy will be found.

It is believed that the investigators who have reported negative results with electrical stimulation either failed to employ stimuli of sufficient intensity or did not provide optimal stretch conditions for the development of maximal isometric tension. It is interesting to note that daily treatments with strong induction shocks for a period of twenty-two seconds under conditions of maximal physiologic stretch resulted in more retardation of atrophy than occurred in the somewhat comparable experiments reported by Grodins, Osborne, Johnson, Arana and Ivy,[5] in which the muscles were weighted with only a 20 Gm. load and treated with 25 cycle alternating current for periods of ten to fifteen minutes each day.

Summary

Experiments were carried out on denervated gastrocnemius muscles of albino rats in order to determine the conditions under which electrical stimulation would most effectively retard atrophy. The optimal intensity was found to be of the order of that required to elicit maximal tension values on comparable exposed muscles. Weak stimuli proved to be ineffective. The treatments were most effective when applied under conditions allowing maximal physiologic stretch. The effectiveness of the treatments was within wide limits independent of the length of the periods of stimulation and proportional to the frequency of the treatment periods. Little difference was noted between the effectiveness of different forms of electrical stimulation if they were capable of eliciting comparable amounts of tension in the muscles.

5. Grodins, F. S.; Osborne, S. L., Johnson; F. R. Arana, S., and Ivy, A. C.: The Effect of Appropriate Electrical Stimulation on Denervated Skeletal Muscle, Am. J. Physiol. 142:222 (Sept.) 1944.

STREAMLINED PHYSICAL THERAPY AND OCCUPATIONAL THERAPY RECORDS

CAPTAIN ANTHONY C. REIGER

Medical Corps, Army of the United States

Pertinent physical therapy and occupational therapy data indicating patient improvement or lack of it have often been overlooked by the referring physician because of a suspected lack of objectivity in the technician's findings and because of insufficient time for wading through a profusion of unrevealing verbiage for the occasional worth while "bon mot." The necessity for objective findings in these fields is particularly great at this time because of the increased use of physical therapy and occupational therapy and because of the great number of hospitalized military personnel who may have considerable difficulty in clearing future claims for disability compensation unless complete, unbiased, concise, accurate information can be presented. Those who have come into contact with the medicolegal aspects of occupational therapy and physical therapy already appreciate the value of records based on objective findings.

However, the attainment of objectivity should be predicated on facility. It should not be necessary, for instance, to maintain a room full of goniometric equipment to measure restriction of joint motion. Nor under our present circumstances of "all out" war production should such special apparatus as electromyographs be demanded if simple apparatus already at hand can offer similar worth while prognostic information. Both patients and members of the medical profession would benefit if the use of easily obtained, simple equipment for objective testing could be combined with the use of record forms which would pictorialize the findings so that a glance would reveal all the pertinent data comparatively. The methods and forms to be discussed are described because of their applicability to both military and civilian hospital usage.

A simple pocket protractor, either the Lufkin 873L, costing approximately $2.00, or Sears Roebuck's selling for $0.98, makes possible the measurement of any joint motion worth measuring to a degree of accuracy which will definitely indicate improvement or a lack of it during a course of treatment. These instruments fit the pocket and have a range of 0 to 180 degrees. Measurements are made by approximating the two arms of the instrument as accurately as possible to the joint to be measured at the extremes of joint motion. When rotatory joint movements, such as pronation, supination and internal or external shoulder rotation, are being measured, the midposition is used as the starting point, one arm of the instrument being maintained in that position. For pronation or supination, this position is with the humerus adducted to the ribs and the elbow at a right angle, with the forearm applied to the abdomen and the thumb vertical. For internal and external shoulder rotation, the midposition is with the humerus abducted to 90 degrees, the elbow bent to 90 degrees and the forearm and hand held horizontal. Measurement of the range of motion of a joint can actually be accomplished in seconds. The ease of measurement, the saving of time as compared with the use of other methods and the handiness of the pocket size make such a protractor an extremely valuable instrumental aid to any physician, occupational therapy technician or physical therapy technician.

Circumference measurements at various levels made with an ordinary

cloth tape measure are objective evidence of the patient's cooperation in carrying out active resistive exercise after prolonged immobilization of a part. If this information is listed side by side with earlier circumference measurements, a definite statement of patient progress can be obtained at a glance.

Electrical and volitional muscle testing results have occasionally not had the prognostic respect they merit because they are listed separately, so that it is necessary to look through several reports for the information desired, and because the normal side was not used for comparison. Most physical therapy departments possess a galvanic-faradic generator, which in the absence of electromyographic equipment can be made responsible for accurate prognostic muscle nerve data. If the findings elicited by such an electrical muscle-testing device on a certain date are listed with volitional testing information on the same record form, and comparisons made with findings on other dates, a succinct prognostic statement of the electrical and volitional status of that muscle and the nerve to it can be made.

To fulfil the requirements of a satisfactory physical therapy or occupational therapy record, the following advantages should be offered:

1. The record should contain enough information concerning diagnosis and treatment to refresh the memory of the busy referring physician.
2. It should be so pictorial in nature that a glance will reveal the patient's attendance, cooperation and improvement or lack of it. It should have facilities for indicating patient attendance even if treatment is being given twice daily, as is being done in many army hospitals.
3. It should enforce a complete physical therapy and occupational therapy prescription as to length of each treatment, precautions necessary, number of treatments to be given and their periodicity.
4. There should be enough room available for the expansion of data if multiple areas are involved.
5. All information should be concentrated on single records wherever possible rather than being scattered on several forms.
6. A comparison of the findings on previous dates should be possible.
7. There should be enough room for progress notes.
8. The record should help deter overtreatment and actually improve the quality of treatment because of the physician's facilitated critical analysis of results.
9. It should require a minimum of clerical work.
10. It should possess a full statement in objective terms of the initial, intermediary and final status of the treated part.

The physical therapy form used at the Ream General Hospital fulfils these specifications in all respects except that it does not accommodate the voluminous specialized data accumulated in neurosurgical cases. The types of treatment available are listed, and by merely typing or writing in specific areas, the referring physician can write a complete prescription in seconds. If a particular form of treatment is to be discontinued, all that is necessary is to cross out the discarded item, dating and initialing the change. If substitution of another type of treatment is wanted, this is noted by inscribing the time details at the proper treatment level and again dating and initialing the change. The days and months are listed so that a comprehensive statement of patient attendance can be obtained from a perfunctory examination. Joint motion measurements are detailed beneath circumference measurements because it may be necessary to expand the area for the former if multiple injuries are being treated.

A duplicate on stiffer paper with similar information is attached to the original record, and when the treatment period is finished, the original is sent back to the referring physician. The duplicate is kept in the permanent physical therapy file. If treatment is to be continued, the duplicate is reattached to the original and the same procedure followed as before.

Objective findings are always listed comparatively by date so that extensive progress notes are not necessary. However, adequate room is reserved at the bottom and on the back of the form for progress notes of unusual occurrences.

Neurosurgery makes special demands on physical therapy for information, the recording of which is best accommodated by an additional form. The listing of the muscles in the form used at the Ream General Hospital is not unusual, but the fact that a glance at a given level assures as complete and comparative a statement of muscle nerve status as can be obtained by simple faradic-galvanic testing on the dates noted makes the form worth while.

The standard volitional testing scale is used, from 0, representing no response seen or felt, to 5, indicating a normal muscle. The lowest rheostat reading associated with a response on the abnormal side is contrasted with that on the normal side. Thus if an F designated faradic response and a G galvanic, O-G-60-15 would indicate that there was no volitional control over the muscle on that date, that faradic current had not stimulated it and that the minimal galvanic current associated with a response was at a rheostat reading of 60 on the abnormal side as compared with 15 on the normal side. If in retesting one month later, a reading of O-G-25-15 were to be obtained, even though the first two figures were unchanged, the definite increase in irritability of the abnormal muscle to galvanic current would have prognostic significance. This finding would not be sufficient to provide a basis for predicting the future course of the nerve lesion concerned, but it would certainly enter into any decisions for future treatment.

The occupational therapy form which is in use at the Lawson General Hospital also enforces proper prescription. If functional occupational therapy is ordered the surgeon merely lists the specific joint and the particular movements to be treated. He may, in addition, specify the activities he wants carried out by noting these in the area provided at the bottom of the form. If diversional occupational therapy is requested, the part of the form concerned with joint motion is not used. Here, again, the physician may specify the particular activities to be carried out or leave this to the occupational therapy technician. The reporting of data is similar to that on the physical therapy form, except that an A for average, E for excellent or P for poor is used in the attendance area to reveal patient cooperation and attendance simultaneously. Each side of the form accommodates one month's observation. Voluminous notes day by day are unnecessary, although adequate space is left for progress notes of unusual happenings. The occupational therapy forms are returned once weekly to the referring physician for changes or comments. Changes are made by crossing out the discarded type of treatment or activity and dating and initialing the change. The new treatment details are then checked, dated and initialed.

Because occupational therapy is a field with which many physicians in military service have not had extensive previous contact, the occupational therapy department of Lawson General Hospital developed a chart analyzing occupational therapy activities from a functional viewpoint. This chart lists the various joints, their movements and the therapeutic value of specified activities in such a way that quick comprehension follows a casual perusal. Considerably heightened physician interest has resulted from its distribution, and as a consequence there has been better weekly supervision of reports.

The objective methods and record forms described have been used successfully under the exacting circumstances of Army medical care and are described because of their time-saving and factual qualities.

CRYOTHERAPY IN DERMATOLOGY *

SAMUEL M. BLUEFARB, M.D.

CHICAGO

There are many methods used to produce peeling of the skin. Those most commonly employed are physical and chemical and a combination of the two. Physical methods consist of irradiation with sunlight and ultraviolet light and the rubbing of pumice stone on the skin. The chemical methods consist of the use of salicylic acid, resorcinol, sulfur, mecurial salts and phenol. A third method is the use of carbon dioxide slush (cryotherapy), which is a combination of the physical and the chemical.

William Allen Pusey[1] introduced solid carbon dioxide in the treatment of skin lesions. Giraudeau,[2] at the Hôspital St. Louis, was the first to use cryotherapy for acne vulgaris, with a mixture of solid carbon dioxide and acetone. A slight modification of this method was used by Karp, Nieman and Lerner,[3] who added precipitated sulfur to the carbon dioxide and acetone.

The superficial freezing and destructive effects of carbon dioxide (carbon dioxide snow) dissolved in acetone are useful in producing just enough superficial irritation to elicit the desired degree of peeling in such dermatologic conditions as acne vulgaris, rosacea, the pitted scars of acne vulgaris, chickenpox and smallpox, telangiectasia and rhinophyma. The term "skin peeling" denotes an artificially produced exfoliation of the corneous layer of the epidermis. The skin peeling process rarely extends beyond the corneous layer. Eller and Wolff[4] stated that there is a definite improvement in the appearance of the skin after a peeling treatment. In some conditions it is a temporary improvement, while in others it is more lasting. The actual peeling is not in itself wholly responsible for the improvement. An explanation might be an increase in the metabolism of the tissues locally, as a result of the intense inflammation and edema caused by treatment. The therapeutic response is due to the repeated exfoliations. The acetone, according to Karp, Nieman and Lerner,[3] serves a triple function. First, it dissolves the sebum, permitting penetration into the follicles; second, it seems to increase the speed with which the solid carbon dioxide changes to the gaseous state, with consequent further lowering of the temperature, and, third, it produces a more uniform paste. The sulfur is carried into the follicles, and it is thought that the deposited particles exert an inhibitory action on the sebaceous secretion.

Technic

The material used consists of a clay mortar and pestle, solid carbon dioxide, acetone, precipitated sulfur and a tampon made of absorbent cotton and covered with a square of gauze.

Solid carbon dioxide (this may be purchased as "dry ice" from most ice cream companies, drug stores or restaurants) is placed in the mortar and ground to a fine powder. Precipitated sulfur (3 to 5 per cent) is added

* From the Department of Dermatology, Northwestern University Medical School.

1. Pusey, W. A.: The Use of Carbon Dioxide Snow in the Treatment of Nevi and Other Lesions of the Skin: A Preliminary Report, J. A. M. A. 49:1354 (Oct. 19) 1907.

2. Giraudeau: Cryothérapie directe a l'aide d'un mélange de neige carbonique et d'acetone, Bull. Soc. franç. de dermat. et syph. 35:463, 1928; La cure d'exfoliation par le mélange de neige carbonique, acetone et soufre dans l'acne, ibid. 36:654, 1929.

3. Karp, F. L.; Nieman, H. A., and Lerner, C.: Cryotherapy for Acne and Its Sears, Arch. Dermat. & Syph. 39:995 (June) 1939.

4. Eller, J. J., and Wolff, S.: Skin Peeling and Scarification, J. A. M. A. 116:934 (March 8) 1941.

to the "snow." Pure acetone is then poured on this mixture with constant stirring until a "slush" is produced. This should have the consistency of soft water ice. The mixture is then applied with the tampon of cotton and gauze. With a rolling motion and with some pressure, the tampon is massaged over the skin. By this means a superficial freezing action is obtained, with the object of causing a certain amount of peeling. This procedure can be repeated three to six times at one sitting. At each application there is a temporary blanching of the skin, and a slight crackling sound may be heard. Immediately after the treatment the skin becomes hyperemic, and in two or three days peeling will be noted. The resulting deposit of sulfur is allowed to remain on the skin for ten to fifteen minutes after the treatment. The application is repeated at weekly intervals. When one is giving the treatment it is especially important to protect the eyes carefully and, so that burns of the skin will be avoided, no solid ice particles should be present in the slush.

Comment

Cryotherapy is not a cure-all for acne vulgaris but merely one of the many methods by which topical applications can be applied to the skin. It is not a substitute for roentgen ray irradiation when the latter is indicated. As the cause of acne vulgaris is still not known, one must not only treat the skin locally but investigate the endocrine makeup of the patient, search for foci of infection, treat secondary anemia and constipation if present, guard against dietary indiscretions and allergies and, in women, investigate menstrual irregularities. There is no one single treatment for acne vulgaris.

Although I have personally seen no ill effects from cryotherapy, Dobes and Keil[5] listed the following contraindications: Smooth, elevated pigmented nevi or dark, so-called "beauty spots" devoid of hair should not have cryotherapy, for such lesions may possibly be potentially malignant. Acne vulgaris in the Negro should not be treated by this method, as disfiguring depigmentation may result. Cryotherapy should not be used immediately after roentgen ray therapy; about a month should be allowed to elapse. Finally, patients who show intolerance to the first application are likely to prove intolerant to further treatments.

Summary

Cryotherapy is an important adjuvant measure in the treatment of acne vulgaris, rosacea, telangiectasia, pitted scars of acne vulgaris, smallpox and chickenpox and for general toning of the skin.

The indications and contraindications for cryotherapy are enumerated.

5. Dobes, W. L., and Keil, H.: Treatment of Acne Vulgaris by Cryotherapy, Arch. Dermat. & Syph. 42:547 (Oct.) 1940.

PHYSICAL MEDICINE IN AN EVACUATION HOSPITAL *

LIEUT. COLONEL WILLIS M. WEEDEN
Medical Corps, Army of the United States

and

CAPTAIN HYMEN D. STEIN
Medical Corps, Army of the United States

Physiotherapy was used rather extensively in World War I. Elaborate equipment was devised at that time and a considerable number of men and women were trained as technicians. Following that war, both doctors and laymen became interested to such a point that unnecessary, expensive equipment was devised, some of which was designed primarily to impress the patient.

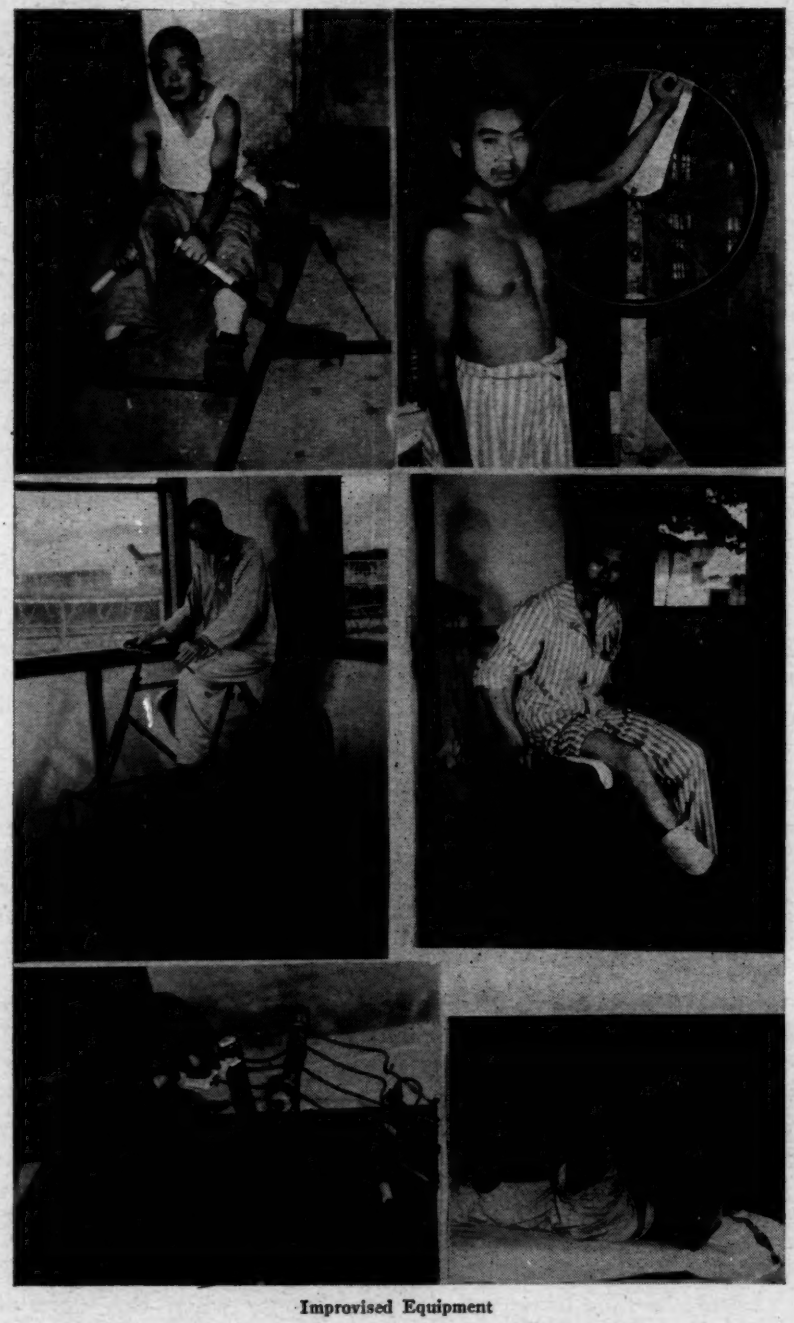
We wish to describe the department of physical medicine established in an evacuation hospital in the jungles of India, including the equipment and its use in the restoration of normal function of the body as a whole. Our experience was largely with Chinese casualties in the China-Burma-India Theater. The background of these patients is such that in most cases modern medical and surgical care is hard for them to understand. They are very conscious of pain and its relief by rest; as a result, it is difficult to encourage them to actively move a limb immobilized for any period of time because of injury. The average American medical officer is occasionally intolerant of such patients. Much of this can be explained by a lack of mutual understanding due to differences in language and background. In physical therapy, the medical officer needs the cooperation and understanding of the patient. That problem has been difficult but not insurmountable.

Plaster immobilization has been the common form of treatment for many soft tissue wounds as well as those of the bone. On removal of the cast, often the wound is healed but the use of the limb is greatly limited as a result of immobilization. While it is common knowledge that physiotherapy should be started early, during wartime the medical personnel have more than enough to do, and that fact is often neglected at the expense of the injured soldier. Too frequently a part becomes so fixed because of pain that eventually irreparable damage is done and limited use of an arm of leg results.

Soon after this hospital was organized, it was noted that most of the surgical patients fell into the following groups: (1) trauma of bones and joints—fractures, dislocations, stiff joints; (2) trauma of soft tissues—scars, contusions, lacerations of muscles and tendons, and paralyses, especially those due to peripheral nerve damage. A physical therapy department was necessary to adequately treat such patients and we were able to construct, from makeshift materials, tables, heat lamps, whirlpool and contrast baths, and various types of pulleys for use on particular groups of muscles. We wish to emphasize that the equipment for a department of physical medicine need not be of the type seen in many hospitals at home, but can be made very simply and practically out of material available at any site. We used scrap lumber from packing boxes, discarded parts of trucks, wire, rubber bands, and metal found in the utility building of the hospital. We made a weight-lifting device from stirrups to which ropes and weights were attached. From old gasoline tanks we made whirlpool baths, foot, and arm baths. An apparatus to provide dry heat was made from a crate with a socket for an electric light in the center. A Chinese officer contributed a bicycle for leg

* Reprinted with permission, Bull. U. S. Army, Med. Dept. 84:85 (Jan.) 1945.

exercises. To heat water, we put a false bottom about a foot from the base of a gasoline drum and, between the false bottom and the base, bamboo chips were set afire to heat the water in the top drum. The hard rubber



Improvised Equipment

core of an old softball was used for hand and finger exercises. Some of these improvisations are shown above.

Personnel

An important factor in the organization of this work was the choosing of enlisted personnel who were to give the prescribed treatments. This

problem was particularly important in our hospital where trained physical therapy personnel are not provided. It is necessary to choose men who have a high degree of intelligence and genuine interest in the patient. Interest, patience, enthusiasm, and encouragement play a great part in the functional recovery of the injured soldier.

The Chinese patient, let us say, has received a gunshot wound of the forearm with a compound fracture of the radius and ulna. His wound is débrided at a forward echelon and the arm immobilized in plaster with the elbow flexed at 90 degrees. After arrival at a fixed hospital, his cast may be changed in from four to six weeks, the arm again immobilized, and in eight to ten weeks, his cast will be removed. The x-ray shows a good anatomical position and callus formation, but there is practically no motion at the elbow or wrist. The medical officer, on removing the cast and finding complete clinical union and healing of the skin wound is likely now to lose interest. The patient, however, has very poor use of his arm and hand, he fears motion, and confidence in his ability to use his arm becomes less and less. Eventually this soldier becomes a chronic invalid and of no further value to the military organization.

To return the patient to duty with his unit as soon as possible, a careful plan of treatment was prescribed, and a chart was devised for each patient. We found, early in the work, that the patient had to be seen at least twice a week by the medical officer in charge of the physical therapy department. Treatments must not be routine. They must be changed as indicated, progress notes must be kept with careful measurements of returning function, and the patient must be told over and over that these treatments are not the complete cure. He must fully understand that a thirty to forty-five minute daily treatment is not sufficient alone to bring about functional return and that he must continue the exercises on return to the ward.

Sections

The several sections in our department were (1) heat and massage, (2) hydrotherapy, and (3) supervised exercise, a section that has proved especially beneficial. It is easy to organize with pulleys, rope, and weights —appliances which will exercise particular groups of muscles. The important factor, however, is actual supervision of these exercises. Our patients return every afternoon for therapeutic supervised muscle training, which we believe has hastened the return of function of many extremities and lessened the period in hospital of many patients. It is important to return the soldier to duty as soon as possible, not only because of his military value but for his own well-being and morale.

Encouragement of the patient and persistence on the part of the technician are of the greatest importance in the early return of function to an immobilized limb. We try to remove the fear of pain in our patients and find it advisable on occasion to use a local injection of novocain. In most cases the patient will move his fixed knee or elbow to a certain point, then stop because of pain in certain areas; in these areas we inject 1 per cent novocain around the fixed or spastic muscles and tendons. One must not be too radical, because often an effusion results when this deformity is corrected too rapidly. We have used novocain fourteen times in ten patients, and it seems we can start active motion earlier and in some patients who might never voluntarily use their fixed joints. We have had two complications: one, an effusion into the joint after attempting to flex a knee; the other, an effusion into an elbow as a result of manipulation. Both of these cases recovered spontaneously with preservation of the improved function.

As yet, we have not used this technic on enough patients to estimate accurately its value. We feel, however, that the use of novocain may have a definite place in certain patients.

Six hundred twenty-five patients were referred to this section from 15 January to 1 July, 1944; 450 of these patients were Chinese and 175 were Americans. A total of 3,800 treatments was given. We have judged our results purely on the functional return rather than on the individual well-being of the patient. We have noted marked improvement in 64 per cent of these patients, some improvement in 22 per cent, and no improvement in 14 per cent.

Conclusions

1. A department of physiotherapy is essential in any medical installation treating patients for more than primary treatment.
2. A physiotherapy department can be organized and equipment built from material obtainable in any camp.
3. Personnel can be trained by any medical officer interested in this type of work.
4. Novocain injections may be of value locally in treatment of some of these cases.

RECONDITIONING IN CIVILIAN HOSPITALS *

HENRY B. GWYNN, M.D., F.A.C.P.

Major, Medical Corps, Reconditioning Consultants Division
Office of The Surgeon General of the United States Army

By definition reconditioning is the restoration of an individual to normal or as near normal as possible mentally, physically and emotionally. The term is sometimes used interchangeably with rehabilitation, but strictly speaking, rehabilitation is the restoration of an individual's earning power. In the Army particularly, this differentiation of terms is important because, although reconditioning is a function of the Army Medical Department, rehabilitation has been delegated by Congress to the United States Veterans Bureau.

The United States Army Medical Department has undertaken a large scale reconditioning program, the aim of which is to restore the soldier as soon as possible to duty in condition to perform his functions, and, if that is impossible, to restore him to civilian life prepared to make a useful and happy adjustment.

There were several reasons for the Army's wholehearted adoption of the reconditioning program. In the first place, it was the efficient and economical approach to a serious problem. It meant that less hospital beds would have to be constructed, that the hospitalization time of the individual soldier would be curtailed, and finally it was felt that the incidence of complications would be reduced. The Army had scraped the bottom of the manpower barrel. The rate of induction of civilians provided only sufficient men to make up for the normal attrition of a vast Army, therefore it was imperative to make the best use of those who were already inducted. One way of accomplishing that was to cut the hospitalization time of the sick soldier by speeding his convalescence and consequently his return to duty. Finally, scientific

* Read at the Sixteenth Annual Scientific Assembly of the Society, October 7, 1944.
* Reprinted with permission, M. Ann. District of Columbia 16:12 (Jan.) 1945.

evidence was accumulating to show that convalescence was the most neglected and most misunderstood phase of illness and that scientific advancement in this field was an urgent necessity.

Reconditioning, in the simplest terms, is the scientific organization of convalescence. It is as scientifically important in its way as the development of sulfonamide drugs and penicillin in theirs. The importance of reconditioning in military medicine will generally be readily conceded, but skepticism is often displayed concerning its place in civilian medical practice. The point is made that the sick or disabled soldier is retained in the hospital until such time as he is fit for duty, whereas in civilian life the hospital patient after a certain point of convalescence has been reached returns home and "rests" before returning to his normal activities. Let it be recalled, however, that the objective in military and civilian medical practice is the same, that is, the return of the disabled patient to his occupation as rapidly as possible in condition to perform his functions. The contention of this paper is that either civilian hospital facilities and personnel are not available or, if available, not properly utilized to secure the speediest and most successful convalescence of the sick or injured individual.

In the past the term convalescence has been interpreted to be practically synonymous with rest. Rest, however, in many instances means deterioration. Let us think back to the many cases we have all seen in which rest has contributed to the development of bone atrophy, physiologic dysfunctions, muscular wasting, and to the development of psychoneuroses. The day has passed when the surgeon who has operated on a patient and removed the appendix loses all further interest in the patient and his convalescence. No more will we hear patients told: "Your stitches are out now, you can go home tomorrow or the day after. When you get home, take it easy for awhile, and when you feel strong enough go back to work." Statements such as these are offensive to the average patient because they minimize the importance of himself.

On the other hand, it is equally harmful for the physician to say: "You were at death's door with your pneumonia attack. Your lungs need rest to heal and you won't be able to exercise or work for weeks." This approach tends to cause a fixation on an organ and makes the illness assume an importance out of all proportion to its physiologic value. Let us not in this period of convalescence impregnate the seed of a noxious weed which will develop in the fertility of the patient's mind and smother the plants of emotional and intellectual attainment which have been carefully nurtured through the years.

The inauguration of the reconditioning program was a constructive step in the direction of ascertaining the facts about convalescence and was a preliminary effort to solve some of its problems. Through a carefully designed reconditioning program, the waking hours of a patient in the hospital can be filled with mental and physical activities of a constructive and healthful nature.

The establishment of such a program will meet with some resistance. The old concept of the rest cure as propounded by Weir Mitchell and by his school of followers has become an inherent part of medical teaching. Rest naturally has its place in convalescence, but its proponents have gone to such extremes that in many instances more harm than good has resulted. A well rounded reconditioning program is a method of attaining by means of a scientifically planned schedule a happy medium between the extreme of rest of mind and body which leads to deterioration and the extreme of activity which also leads to physical and mental damage.

A precise pattern for a model reconditioning program for all types of

civilian hospitals is beyond the scope of this paper. Certain general principles of reconditioning will be pointed out and certain factors common to all civilian hospitals will be discussed. The type of hospital, whether public or private, general or specialized, is of great importance in program planning. Each particular type has its own specific problems. As the different features of a well balanced program are discussed it will be readily seen that the emphasis of certain portions of the program must be shifted to meet local conditions.

The first step in the organization of a reconditioning program in a hospital is the establishment of a reconditioning service which should be on an equal plane with other professional services. The director of this should be a medical man who has had training and experience in physical education and physical medicine, and has at least an intelligent interest in psychiatry. Needless to say, the greater the educational and cultural attainments of such an individual the greater will be his value to the hospital. Under his direction should be the physical medicine, the occupational therapy, and the social service departments of the hospital.

The question is frequently asked: "When should reconditioning begin in the patient's hospital stay? Since its purpose is to speed hospitalization and to make it more pleasant and constructive, it begins immediately upon admission of the patient to the hospital. An interview with the patient on admission by a member of the reconditioning staff will immeasurably allay the patient's natural fears, will orientate him about hospital life, and will go a long way toward restoring the patient's confidence and ego which are often shattered by the realization of disease or injury. In this interview reconditioning should be explained to the patient as a form of therapy, as much a part of his treatment as his operation or his medicine. The opportunities in mental and physical reconditioning available at the particular hospital should be discussed with the patient in order to discover his latent talents and interests and in order to arouse his enthusiasm about the whole program. This interview in itself demonstrates to the patient that there is no concern about his prognosis and that this period of hospitalization because of illness is regarded as a necessary lull in the ordinary routine of the patient's life which affords an opportunity for mental, physical and emotional stock taking. In other words, this is the opportunity everyone longs for, "to get away from it all." Instead of spending this time in morbid introspection it is to be devoted to wholesome, constructive and novel mental and physical experiences. The patient would be told that this interview will be discussed with his physician, and the actual scheduling of activities will depend entirely upon his physician's decisions as to his capability to participate.

For purposes of efficient management the patients should be divided into four categories: Class IV patients should be those confined to bed; Class III, those who have just been released from bed; Class II, patients who are about ready to be discharged from the hospital or who are prolonged ambulatory patients; Class I, patients who have been released from the hospital but who return daily to participate in the Class II program until finally discharged from medical care.

To be effective all these groups must have a compulsory, scheduled, full day's program. The only deviation allowed would be by order of the patient's physician. The fact that the patient is thus guided in his activities, but complete regimentation avoided by some choice of activities, is therapeutic in itself. It must be remembered that the patient upon entering a hospital is severed from many of his links with reality including family, job, and normal environment. Plus these anxieties he has possibly pain and certainly uneasiness regarding his condition. This transference to capable hands of the re-

sponsibilities for the utilization of his waking hours is a forward step in the day-by-day psychotherapy which is essential if "hospitalitis" is to be avoided and invalidism held to a minimum.

The daily schedule for each group of patients would include calisthenics, remedial exercises when indicated, physical therapy when indicated, occupational therapy when indicated or when desired by the patient, orientation periods, educational periods, and rest periods. A daily well balanced schedule would be arranged for each patient by the reconditioning service after consultation with the patient's physicians and after the initial interview with the patient. As the patient's strength improved the patient's classification would be changed by his physician and a new schedule arranged by the reconditioning service. The beneficial effect both mentally and physically of a systematic approach to convalescence cannot be overemphasized.

Physical reconditioning in civilian hospitals must necessarily consist mainly of general calisthenics. The responsibility for the administration of these calisthenics should be assumed by the physical medicine department. The well staffed department should have men and women trained in physical education who will be qualified to give appropriate calisthenics to the Class III, II and I patients in groups. The calisthenics to be effective must be appropriately selected to affect the important muscle groups of the body and must utilize the "overload principle." This merely signifies that any exercise to secure effective results must be carried on until the muscle group is tired and that increase in exercise be secured daily by use of a cumulative count and by increasing the tempo of the cadence. In order to secure the maximum results from these exercises the leadership qualities of the instructor and the employment of interest stimulators such as music and competitive methods are essential.

When specific portions of the anatomy are affected by disease or injury, special remedial exercises should supplement the general calisthenics. These should be prescribed by the patient's physician but should be supervised by the physical education instructors.

Mental reconditioning is at least as important as physical reconditioning and is accomplished by the presentation of orientational, educational, and recreational features. In a hospital, orientation, education and recreation cannot and should not be sharply divided. All features presented to the patient should be of such interest and value that they combine all three.

Orientation in civilian hospitals should begin in the morning by distribution of newspapers to all patients with an attached sheet giving hospital news, public address system's program, and special events of the day at the hospital. This should be supplemented by news broadcasts during the day over a public address system.

A public address system properly managed is invaluable in mental reconditioning. A daily schedule with choice of two programs is highly desirable. Certain features, considered therapeutic in nature, such as news broadcasts and certain musical programs would be broadcast by both channels making participation in this feature compulsory. The value of music is well recognized, and the hospital public address system programs should be supplemented by the live appearances of volunteer guest musical artists.

In the hospital theater scheduled showings of newsreels, short subjects of educational nature and escapist films should be held. Those patients who are confined to bed should not miss the beneficial effects of motion pictures, and portable projectors should show 16 mm. editions of the March of Time and similar films in the wards. The value of these in diverting the patient's mind and in stimulating purposeful thinking cannot be denied. The very fact that these and other such features are presented in a hospital will change the

present morbid, hushed atmosphere into one of cheerfulness and gayety. The enactment of the patient's personal drama of illness, buoyant life instead of the dark foreboding one of death. The emphasis in medical thinking will be changed from pathology to therapy and the patient will work hand in hand with the physician to achieve their joint goal, the patient's recovery.

A series of lectures by members of the staff on medical and medical-social subjects might be arranged. These talks should be followed by quiz sessions, and round-table discussions should be encouraged. Features of this type not only are mentally stimulating but are highly desirable in obtaining public cooperation in public health and preventive medicine projects.

The hospital should possess a good library, and mobile library carts should make this important educational and recreational feature available to all patients. It has been found in Army hospitals that Western and detective stories lead in popularity, but best sellers and more serious books should be available and the patients encouraged to use their spare time during hospitalization to good advantage. Looking back upon time spent in activities such as these cannot help but make the ex-patient feel that his hospital experience was an enriching and constructive one.

Last but far from least is personal service for the patient. The patient in the hospital should be divorced from as many of the problems and cares of his ordinary life as possible. During the initial interview the patient should be cautiously questioned about personal problems and later should be tactfully interviewed by a trained social worker. Aside from any specific good that may be accomplished by this approach the mental catharsis thus produced will be therapeutic in itself. It seems remarkable that in most hospitals social service is reserved for the charity patient while other patients whose social problems are often multiplied in ratio to their wealth are totally neglected. Probably the curricula of medical social service schools will have to be somewhat altered to prepare individuals to competently enter this new field of scientific reconditioning.

Physical medicine is only beginning to come into its own. The Baruch Committee on Physical Medicine and other such groups are stimulating research and correlating scientific knowledge on this subject in order to get it firmly established as a fundamental tool of medical therapy. Too often physical medicine is looked upon as merely an orthopedic therapy aid and its role in other surgical, medical and mental conditions completely overlooked. This condition will only be corrected by improvement of instruction in physical medicine in medical schools. It suffices to state here that physical medicine is a most important section of reconditioning and a large percentage of patients in a general hospital would benefit by scientifically prescribed massage and the use of ultraviolet rays, infra-red rays, diathermy, whirlpool baths, faradic and galvanic stimulation, and other such measures. A most important feature of a physical therapy department should be the remedial gymnasium equipped with medicine balls, skipping ropes, weights, pulleys, shoulder wheels, horizontal ladders, rowing machines, Indian clubs and stall bars.

Occupational therapy has long been used in mental hospitals, but few general hospitals have established departments. The Army discovered how few trained workers were available in this field when efforts were made to staff all general hospitals. There are three main types of occupational therapy: diversional, functional and prevocational therapy. The average civilian general hospital would be concerned with only the first two. Occupational therapy work ordinarily should be a prescribed activity for specific types of patients, but when space and personnel are available other interested patients

should be permitted to participate when their physicians consent. Activities found interesting and of definite therapeutic value to the patient are woodworking, small metal work, ceramics, leather work, weaving, plastics and graphic arts.

Here is presented an example of a typical day's schedule for a patient who has had a normal temperature for three days following an average attack of pneumonia. The patient would rise, shower, and dress between 7:30 and 8:00. Breakfast would be served at 8:00. The period between 8:30 and 10:00 would be reserved for physician visits but would also furnish an opportunity for the patient to read the newspaper and to hear latest news bulletins and a light musical program over the public address system. Between 10:00 and 10:30 the patient would participate in group calisthenics in the remedial gymnasium. Between 10:30 and 11:30 the patient would attend newsreel and educational short subject motion pictures. The period between 11:30 and 12:00 noon would be used for a personal service interview, selection of a book at the library, or listening to a radio program. Lunch would occupy a half hour between 12:00 and 12:30. This would be followed by an hour's rest period. At 1:30 the patient would go to occupational therapy and stay until 2:30. Between 2:30 and 3:00 a trained social worker would interview the patient and afford him an opportunity to discuss any personal problems he desires. At 3:00 he would go to an entertainment type of motion picture of an escapist nature. From 4:30 until 5:00 a second group of calisthenics would be given. From 5:00 until 6:00 the patient would have a rest period. At 6:00 the patient would have supper. From 7:00 until 9:00 he would receive visitors, listen to the radio, or attend a concert. Of course, patients would be excused from these activities in order to keep professional appointments, and the individual schedule would have to be approved by the patient's physician. It cannot be overemphasized that reconditioning is a form of therapy and that it must be prescribed to meet the needs of the individual patient.

Many physicians may object that such a program will markedly increase the cost of hospitalization. Evidence is accumulating to show that such a program curtails hospitalization time in the Army from 10 per cent to 33⅓ per cent. If this estimate holds true even to some extent in civilian practice, this saving, plus the lowered incidence of complications and the shortened convalescence at home before resuming normal activities, will more than pay the additional cost.

If such a program is adopted, it means some physical changes will have to be made in most hospitals. It entails the construction of a theater or hall areas for physical therapy and occupational therapy, installation of a public address system, provision of an area suitable for a library, and office space for administration. Some modern hospitals undoubtedly will even have a swimming pool and a gymnasium. In planning a hospital suitable for a good reconditioning program it must be remembered that the hospital will be the reconditioning center for the community and that patients discharged from the hospital proper may still return daily for reconditioning until finally discharged by their physician.

Before any hospital would want to embark upon such a radical and ambitious course it would naturally want adequate evidence that this scientific organization of convalescence is beneficial to the patient both in time saved and in healthful results attained. Evidence is beginning to accumulate to prove that the United States Army Medical Department was justified in expending the money, time and personnel necessary to successfully carry out its vast reconditioning program. Unfortunately, due to security reasons, more detailed data regarding this Army program cannot be released at this time.

However, recent articles such as Harrison's[1] have aroused great interest; he states: "There is no proof that rest in bed carried out for many weeks after symptoms have disappeared is of value in the physical management of the patient with congestive failure, angina pectoris, or myocardial infarction." Powers[2] showed that early postoperative activity in a variety of major surgical cases reduced hospital days from 16.1 to 10.3 and total convalescence from 10.3 weeks to 5.7 weeks. He also showed that in a group of 100 patients, those who had enjoyed early activity had a much smaller incidence of postoperative complications than those who had a more conventional type of convalescence.

Dock[3] points out that "The physician must always consider complete bed rest as a highly unphysiologic and definitely hazardous form of therapy, to be ordered only for specific indications and discontinued as early as possible."

The abuse of rest in many types of orthopedic conditions has been demonstrated by Ghormley.[4] Levine[5] says, "Rest in bed, which has been the backbone of our treatment of heart failure, needs reconsideration in the light of some possible harmful effects."

Finally, Menninger[6] states that "The abuse of rest as a treatment in psychiatric conditions represents a neglect or misunderstanding of the real pathologic conditioning of a neurotic patient under the guise of a treatment which is not only futile and expensive, but very often definitely harmful." He further states, "The problem is rather to discover what prodigious internal consumption and blockade of energy has occurred and how it can be diverted again to fruitful employment."

Is the establishment of a reconditioning program in civilian hospitals, as outlined, a visionary plan which is never destined to see the light of reality? The answer to that question probably depends largely upon public opinion. The impetus for a great many medical-social changes has to be furnished by public opinion. This can be understood when it is considered that most of them involve the expenditure of large amounts of money which must be approved by public agencies. However, to be successful such a program must also have the enthusiastic support of the medical profession. This will only be obtained when sufficient scientific data are assembled to change ideas which have been in vogue for several hundred years. These data are now accumulating and will gradually make an impression in the curricula of medical schools. As far as public opinion is concerned, a great start has been made by dissemination of factual information concerning the United States Army Medical Department's program. Enthusiasm will grow only as the economic, social and medical advantages of such a program are presented and explained to the public which must pay the bill for such a revolutionary change in medical practice.

---

1. Harrison, T. R.: Abuse of Rest as Therapeutic Measure for Patients with Cardiovascular Disease, J. A. M. A. 125:1075 ,1944.
2. Powers, H. H.: Abuse of Rest as Therapeutic Measure in Surgery, Ibid. 125:1079, 1944.
3. Dock, W.: Evil Sequelae of Complete Bed Rest, Ibid. 125:1083, 1944.
4. Ghormley, R. K.: Abuse of Rest in Orthopedic Surgery, Ibid. 125:1085, 1944.
5. Levine, S. A.: Some Harmful Effects of Recumbency in Treatment of Heart Disease, Ibid. 126:80, 1944.
6. Menninger, K.: Abuse of Rest in Psychiatry. Ibid. 125:1087, 1944.

THE CARE OF SOLDIER'S FEET *

CAPTAIN PAUL A. PEMBERTON

Medical Corps, Army of the United States

Certain problems in the care of soldiers' feet are peculiar to men taken from civilian occupations and put through a basic training center. Most of these soldiers with foot complaints should be cared for in the dispensaries without reference to an orthopedist. In this way treatment can be started early and excessive loss of time from training avoided. This paper is addressed, therefore, primarily to the dispensary officers to aid them in determining the disposition to be made at the first examination of these soldiers.

Although medical officers are responsible for the physical welfare of trainees, the comfort of the individual is not our primary motive in treating men with foot complaints; instead, an endeavor is made to keep the greatest number of soldiers on active duty as much of the time as possible. Our responsibility is comparable to that of the coach who at the beginning of the training season must get his men in fighting shape in spite of discomforts, realizing that thereby fewer casualties will occur throughout the season. The ability to predict the ultimate outcome of a soldier whose foot causes symptoms during basic training is of great value. We should be able to tell before beginning a course of treatment whether or not the soldier will be able eventually to continue on full duty. Thus we can avoid excessive waste of time and effort by getting the permanently disabled soldier assigned to limited service or out of the Army. Examination of the feet should be made with both shoes and socks off and trousers rolled up to the knees. Both feet should be examined with the patient first in the standing and then the sitting position.

The tendency is to issue shoes that are too small. The G. I. shoe will furnish support to a normal foot if properly fitted. The shoe size should not be determined entirely by the total length of the foot but also by the distance from the back of the heel to the head of the first metatarsal. The first metatarsophalangeal joint should be at the widest part of the shoe, which is at the flare of the inner border of the sole just in front of the shank. In this way the medial side of the upper will fit like a glove under the longitudinal arch and help support it. In a foot with relatively short toes there may be an inch between the end of the first toe and the front of the shoe, but this is of no consequence. The average soldier will wear a shoe two sizes longer than he wore in civilian life. The width should be such that the metatarsal heads may spread to the maximum extent on weight bearing, but any width in excess of this is uncomfortable.

The soldier should be instructed in the proper care of his shoes. Saddle soap should be rubbed daily into the leather of new shoes until it is pliable. They should be kept dry and polished with a wax polish. Wearing any one pair only on alternate days will allow thorough drying. Trainees should wear wool socks while on duty, and a clean pair should be put on once or twice daily. Two pairs of wool socks will avoid many minor foot disabilities which commonly occur on long marches. The feet should be bathed daily. A hot foot bath after a hard day of training will relieve fatigue. However, the soldier should be warned against soaking the feet in hot water too frequently or too long. A period of fifteen or twenty minutes is adequate.

* Reprinted with permission, Bull. U. S. Army, Med. Dept. 84:110 (Jan.) 1945.

The use of foot powder is sometimes beneficial, and talcum is as good as a medicated powder for routine use.

Disorders of soldiers' feet may be classified into three groups: (1) those in which treatment is not required but may be of benefit in relieving symptoms; (2) those in which treatment is necessary and is successful; (3) those in which treatment is unsatisfactory.

Mild Foot Strain

The first group comprises normal feet which are subjected to excessive strain. The diagnosis can best be expressed as mild foot strain. The only symptom is pain in the feet and legs on walking and there is not sufficient disability to keep the man from full duty. This occurs in individuals who were not working on their feet all day prior to induction. The symptoms are more severe in obese and short-legged soldiers who must take the same stride as the taller men in the ranks. Pain begins in the first few days of drill and its intensity increases for two to three weeks. By the fourth week the symptoms are subsiding, and at the end of six weeks of training soldiers with normal feet can drill all day or hike twenty miles without pain. In this condition there is neither cramping nor swelling of the feet and legs. Examination shows full range of motion in all joints of the foot and ankle with no pain at the extremes of range of motion. This is the most important diagnostic point in differentiating this from more serious conditions. Moderate tenderness is present over the muscles of the calf, the ligaments of the sole of the foot, and the capsules of the midtarsal joints, but it is never extreme nor well localized. In the leg it is more conspicuous along the medial border of the upper tibia, apparently due to strain at the origin of the tibialis posterior. In the foot, tenderness is usually more marked at the posterior attachment of the plantar fascia and beneath the astragaloscaphoid joint.

Treatment is usually not required in this group. The majority of such inductees never report on sick call but assume it is part of the normal conditioning process. Those who come for relief should be reassured by explaining to them the nature of their complaints and the value of proper foot hygiene. The size and condition of the shoes should be checked. A hot foot bath every night will give relief. The feet should not be taped. Firm taping will support the feet and limit joint motion, thereby giving relief from pain, but the muscles will be permitted to rest instead of being forced to work until they are strong enough to do so without pain. For the same reason, the soldier should not be kept in quarters or on light duty for relief of symptoms, as this would only postpone the time of his complete recovery and he would go through the same thing each time he started on a severe training program. The dispensary surgeon should recognize this syndrome and deal with it without the necessity of referring such patients to the specialist or the hospital.

The second group is the largest and most important class of foot disorders with which the dispensary officer comes in contact. It includes those lesions which result in disability unless properly treated but for which there is a treatment which results in complete recovery.

Faulty Foot Posture

The most common condition found is faulty foot posture, usually manifested by pronation of the foot. This is recognized by an outward rotation of the calcaneus with dropping of the inner border of the foot, thus throwing the body weight on the medial side of the foot and resulting in symp-

toms of strain of the longitudinal arch. The condition is due to relative weakness of the posterior tibialis muscle. There is sometimes an accessory navicular or prominence on the medial border of the navicular with resultant poor attachment of the tibialis posterior. The strain on the medial side of the foot may cause lowering of the longitudinal arch, resulting in one of the several types of flatfoot. Examination usually shows, in addition to pronation of the heel, tenderness beneath the astragaloscaphoid joint, where the patient localizes the pain. There is no swelling and no limitation of motion. Forcing pronation of the forefoot may cause pain. The diagnosis is strain due to faulty foot posture and treatment is directed toward correction of the pronation. This includes overcoming the excessive lengthening and weakness of the tibialis posterior. Mild cases can be treated satisfactorily with a medial wedge under the heel of the shoe, 3/16 inch thick along the inner border and tapering off over halfway across the heel. The heel of the foot must fit snugly into the shoe.

In more severe cases the inner border of the heel is lifted by an arch support in addition to the wedge. A firm flexible support is used and the high point of the support should come under the sustentaculum tali and lift it up. This must be fitted carefully as there is a tendency to get the high point of the arch too far forward, usually under the navicular. This throws all the weight on the arch support and does not correct the pronation.

In the use of arch supports, the point of highest elevation of the longitudinal support should vary according to the condition for which the appliance is being fitted. There are numerous variations in size, shape, position, and consistency of both longitudinal and metatarsal pads, and they are too complex to be described on a prescription form. The skill required to properly fit supports is beyond the training and ability of a shoe clerk. There is little use for steel arch supports in the Army although they are beneficial in many conditions seen in civilian practice. A foot which requires a rigid support for relief of symptoms will not stand vigorous Army training.

A support made of sole leather with a hard felt longitudinal support and a felt or sponge rubber metatarsal support fastened on its under surface has been found of value. The sole leather should be stiff and of a thickness known as "8 to 9 iron." The felt is listed in the Medical Department Supply Catalog as No. 3760000, Splint accessory felt, wool, white, ½ inch thick. The leather is cut to proper shape from a pattern, which can be made up in advance in several sizes, and is then skived along both sides and across the front end. A leather skiver is usually standard equipment in a shoe repair shop. The skiving can be done with a knife or on a sanding drum. The felt is cut to shape, skived with a knife, then finished off on the sanding drum after being glued to the leather. The support is put together with heavy rubber cement (see illustration). The completed arch support may be covered on the under surface with a piece of thin, soft leather known as russet lining splint.

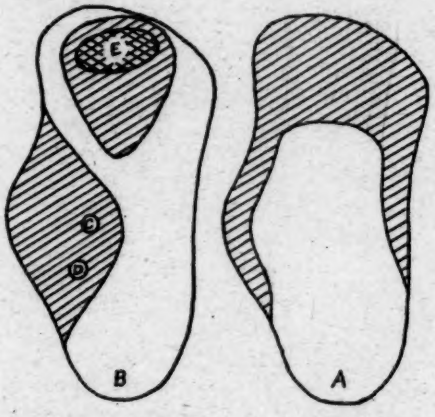
The pronated foot usually will be relieved sufficiently by medial wedges and a proper arch support so the soldier can continue on duty. Treatment should be continued indefinitely; usually two to three months are required to strengthen and shorten the invertors of the foot so that corrective appliances can be discarded.

Special exercises for this condition in soldiers are not advisable as the muscles are already being developed as rapidly as possible by the training program, and if they are allowed to work all day in a mechanically advan-

tageous position the effect is better than with fifteen minutes of specialized isolated muscle exercises.

Acute Foot Sprain

Acute sprain is sometimes associated with the chronic strain of poor foot posture, usually within the first two weeks of training or after a long march. In addition to the signs described there is swelling through the mid-tarsal region. Ecchymosis does not occur. This foot will require rest from weight bearing if symptoms are severe. Taping the foot in slight inversion, with a fitted piece of felt under the longitudinal arch, will permit a limited amount of walking. The ¼-inch firm gray felt (Med. Dept. Item No. 3761000), either one or two thicknesses, is more satisfactory for this purpose than the harder white felt used for arch supports. When the acute symptoms are relieved, the pronation should be corrected to prevent recurrence.



Details of construction of the flexible arch support. "A" shows the pattern of the sole leather. The shaded area indicates the amount of the edge which is to be skived. The front end of the support is thinned out to allow it to conform to the metatarsal pad. "B" shows the usual shape and location of the longitudinal and metatarsal pads. "C" is the highest part of the arch when this is to come under the navicular. "D" is the highest point of support when this is to come under the sustentaculum tali as in the pronated foot. The darker shaded portion at "E" is the usual location of the highest part of the metatarsal pad.

Congenital Weak Foot

A common condition causing complaint in the early stages of training is the congenital weak foot, which is usually long and slender, with thin bones, poor muscles, and relaxed ligaments. Such patient's will probably volunteer the information that they have received some benefit from arch supports or special shoes, but there is no consistency in the type of support which has given relief. It varies from an almost shapeless sponge rubber pad to a Whitman plate. The most striking feature of the congenital weak foot is its flexibility, and the increased range of motion in all the joints. The important thing in treatment of such a foot in the Army is to realize that this soldier will not stand as much training at first and will require a longer period before he is able to keep up with his fellows. However, he can be expected to do full duty eventually. Treatment consists of the use of a flexible arch support and adhesive strapping, the latter being continued over a long period of time and applied in a manner to support any joints showing symptoms of strain. The arch support has the high point of the

longitudinal pad under the navicular. The support should be comfortable when first used and no attempt should be made to have it as high as can be tolerated, as is done in correcting pronation. The support may have to be continued permanently. A new sponge rubber arch support soon to be available in the Army will be of value in the treatment of weak feet.

Metatarsalgia

A group of cases which can be classed together only because of similarity in treatment is characterized chiefly by the symptom of metatarsalgia. The pain under the heads of the second, third, and fourth metatarsals is commonly associated with pronated feet and weak feet. There may be a short first metatarsal, apparent drooping of the middle metatarsal heads with a thick callous underneath, or mild pes cavus. Treatment consists of properly fitting a metatarsal pad of felt or firm sponge rubber. This is either glued to the inside of the shoe or is fastened to an insole which can be inserted into any shoe. The pad must be high enough, wide enough, and properly placed so that weight is borne on the shaft of the metatarsal and not on the head.

Congenital Flatfoot

Congenital flatfoot is commonly seen in the dispensary particularly among Negroes. Its principal importance to the dispensary surgeon is to determine the extent of disability, if any. This patient gives a history of having always had flat feet. Examination shows a perfectly flat foot, normal range of motion in all of the joints, and a straight inner border. Such a foot does not constitute a disability, is probably no more subject to strain than what is commonly considered to be a normal foot, and should *not* be fitted with an arch support. The difficulty usually encountered with this type of foot is due to the fact that it is encased in a shoe which was made for a foot with an arch in it. In civilian life this man probably wore a cheap shoe which broke down as soon as he stepped on it; so he had no difficulty. The problem can be solved by giving him a shoe of sufficient width through the shank.

This type of foot is subject to certain changes which must be recognized, as they constitute disabilities. If there is any swelling of the foot on walking, any limitation of joint motion, or a bulging of the medial side of the foot, the soldier will probably never be able to do full military duty. The bulging is the head of the talus which is twisted medially and downward, resulting in poor articulation with the navicular and associated with a valgus of the entire forefoot. There is no satisfactory treatment for this condition, as the Army is no place for radical surgery for flat feet.

Flat Feet in the Army

There has been a tendency to consider per planus as a pathologic entity of serious import. Our experience indicates that flat feet are no more likely to be symptomatic than feet with a demonstrable longitudinal arch. A flat foot is subject to strain in the same manner as other feet and thus may become painful, but relief depends on successful treatment of the strain and not of the flatfoot.

There is on indication for classifying pes planus according to degree. The following classification is made only to show that the relation between the various degrees of flat feet and the true anatomic or pathologic condition of the feet is of no importance.

1. *Pronated foot* is the foot with faulty posture. It is usually considered

a flat foot by the patient and frequently so diagnosed by the physician. Actually, if the pronation of the heel is corrected, it will be seen that a normal longitudinal arch is present. Discussion of the recognition and treatment of this type of foot is given under the subject of faulty foot posture.

2. *Low arch in an otherwise normal foot.* The normal longitudinal arch varies from the high arch approaching that if a mild pes cavus to the complete absence of an arch in the congenital flat foot. The relatively low arch is commonly classed as flatfoot of first or second degree. However, this foot is not symptomatic because of the lack of elevation of the arch. It is subject to the same disorders as any normal foot and if it becomes painful should be treated according to the pathology present, and not simply as a low arch. Diagnosis of this type of foot is made chiefly by exclusion of pronated foot and weak foot in a foot with a relatively low arch and no other obvious abnormalities.

3. *Congenital weak foot* might be considered as the only flat foot in which the symptoms present are related to the sagging of the arch, and which can be relieved by replacement of the arch. This type of foot is not always markedly flattened and there is no parallel between the degree of the flatness and the severity of the symptoms. The foot is weak; so the muscles cannot hold it up on weight bearing. The joints are flexible and the ligaments are loose and consequently readily subjected to strains if not properly supported on weight bearing. Further discussion of diagnosis and treatment of this condition has already been given.

4. *Congenital flatfoot* is a completely flat foot. If painful, the symptoms are not due to the absence of a longitudinal arch. No attempt should be made to form an arch, as this will only increase the disability.

5. *Spastic flatfoot* is easily recognized by the fixed pronation of the heel, with little or no sub-talar motion, spasm of the peroneals, and absence of x-ray evidence of arthritis. This is usually a serious disability. Treatment requires hospitalization, which may give relief but will not ordinarily result in making the man fit for full duty.

6. *Depression of the transverse arch* is a misnomer. All of the metatarsal heads normally rest on the ground on weight bearing. Because of the differences in the shape of the metatarsals there is a transverse arch present on the plantar surface of the foot behind the metatarsal heads and this varies in height. However, no relation has been noted between variations in the height of this so-called arch and any symptoms in the foot. The symptoms of metatarsalgia may result from failure of the proper distribution of the body weight through the metatarsals to the ground either in standing or walking but this is not accompanied by changes in the transverse arch of the forefoot.

Minor Foot Injuries

Minor foot injuries are usually not difficult to recognize and treatment is satisfactory. Acute strains or sprains of the feet occur chiefly on the obstacle course in jumping. X-ray should be used to rule out fractures. The injury may involve the plantar fascia or some joint. The foot should be taped to support the injured part and, if there is any swelling, should be relieved from weight bearing by a few days in quarters. Tenosynovitis occurs frequently in the heel cord, the anterior tibial, and the extensors of the toes. Taping in a position which shortens the affected tendon will relieve the pain; rest for a few days in quarters may be necessary. A thick felt pad under the heel will relieve the pain of Achilles' tenosynovitis. The back of the shoe should be softened by rubbing in saddle soap. The

painful bursa, or exostosis and bursa combined, on the dorsum of the foot usually can be relieved by the wearing of longer shoes and if necessary a soft felt pad under the tongue of the shoe.

March Fracture

In march fracture, there is a history of rapid onset of pain in one forefoot. The pain may not be disabling and the soldier may continue to take long hikes, but the discomfort is continuous on weight bearing and becomes increasingly severe. Examination always shows soft tissue swelling and localized tenderness. The swelling may be firm and localized over the shaft of the second, third, or fourth metatarsal, or it may be soft and involve the whole forefoot. The swelling is felt on both the dorsum and the plantar surfaces of the foot. The tenderness is over the site of the fracture along the shaft of one of the central metatarsals. There may be ecchymosis.

With such findings, the patient should be hospitalized as a suspected march fracture. Diagnosis of this injury should not depend on x-rays. There may be three weeks between the onset of symptoms and the first x-ray evidence of a fracture.

When the patient is discharged from the hospital, his shoes should be checked. Soldiers suffering from march fracture have usually been wearing shoes which are too short.

Posttraumatic Adhesions

A painful foot may follow some injury such as fracture, sprain, crushing injury, or trauma which caused prolonged swelling of the foot. The injury may have been anywhere from the hip downward with adhesions which limit joint motion and are painful when attempt is made to force motion in the joint. The diagnosis is made on the history of injury and the limitation of motion, with absence of clinical and roentgenologic evidence of arthritis. Manipulative therapy is more successful in this type of foot problem than in any other. If the foot is too stiff and appears to be bound down by firm bands around the joints, little improvement can be expected and this patient should be placed on limited duty or discharged. The manipulation should accomplish as much stretching and as little tearing as possible. It is done gently under general anesthesia in the hospital. All joints are put through a full range of motion even if it requires two or three manipulations. The patient is up on his feet the next day and the foot is kept active. He may be returned to duty within ten days. If there is any swelling, ecchymosis, or other evidence of severe reaction in the foot, the treatment was too harsh and may do more harm than good. Treatment should not be repeated sooner than three weeks.

Plantar Warts

While plantar warts constitute real disabilities, they can usually be relieved by repeated treatments with local applications of chemical cauterizing agents. If a chiropodist is available for the dispensary, these patients may be turned over to him. If the lesion is extensive, the patient should be transferred to a general hospital for x-ray therapy.

Convalescent Foot Care

Special attention should be called to a condition due to the lack of proper care of the feet of a patient who has been confined to the hospital. It is common practice for this man to be on his feet in the hospital area for varying periods before returning to duty. Foot strain may result, due to wearing canvas slippers, prolonged bed rest, or weakness associated with the original illness. All patients confined to bed for prolonged periods should

have proper support for their feet as soon as they are out of bed. This means shoes should be worn as soon as the patient gets on his feet, and arch supports of the type described for weak feet should be fitted if necessary.

Permanently Disabling Foot Problems

Medical men are accustomed to being gratified if after treatment of difficult cases they accomplish a degree of improvement which under the circumstances is the best to be expected. However, in treating foot problems which existed prior to induction and which result in disability early in training, any success short of perfection is a failure. Included in this class are such more or less permanent disabilities as pes cavus, hallux valgus, spastic flatfoot, arthritic foot, either posttraumatic, gonorrheal, or part of a generalized arthritic syndrome, paralytic foot, congenital deformity, and multiple congenital hyperkeratosis.

Pes cavus, recognized by the unusually high arch and drooping metatarsal heads, can sometimes be treated satisfactorily. The symptoms are usually those of strain of the longitudinal arch and metatarsalgia. An attempt is made to redistribute the weight over as much of the surface of the foot as possible. This is done with a high, firm arch support with the highest point of the longitudinal pad under the navicular, and a high, wide metatarsal pad which will tend to elevate the heads of all five metatarsals. In our experience the metatarsal bar under the shoe has been of little use on the stiff sole of a G. I. shoe.

The treatment of hallux valgus is unsatisfactory. Either it is sufficiently mild to require no specific treatment or it is associated with other mechanical defects which cause strain and remain even after successful correction of the valgus deformity. If treatment of the associated foot strain and fitting with proper shoes do not give relief, correction of hallux valgus probably will not result in a foot that can stand the stress of full military duty. The same can be said of most cases of arthritic feet. It is important to recognize such a foot when it is first seen. There is a history of recurrent episodes of stiff, painful, swollen feet; there may be an apparent etiologic factor, such as injury, onset during an attack of gonorrheal urethritis, or typical history of findings of generalized arthritis. This soldier will be seen during the first few weeks of training. Characteristic findings are limitation of joint motion and pain at the extremes of the range of motion. In the absence of other demonstrable causes this should be considered arthritis. Tenderness, swelling, local heat, fluid in the joint, characteristic x-ray changes, and increased sedimentation rate may be present. Once the joints of a foot have been damaged by arthritis, the prognosis for full military duty is extremely poor.

The majority of the cases of multiple congenital painful hyperkeratoses seen have been in Negroes. These are characterized by thick tender callouses over the sides and back of the heel, along the medial side of the first metatarsophalangeal joint and the great toe, under the metatarsal heads, and at any other points of continuous irritation on weight bearing. Treatment has been unsatisfactory and it is believed that this disqualifies a man for full military service.

Conclusion

There is nothing peculiar or mysterious about the examination and treatment of foot problems. The foot is made up of the same fundamental anatomic structures as the rest of the skeletal system, and these are subject to the same disabling factors of disease and injury. The treatment of disabilities of the feet is carried out according to established principles of orthopedic surgery.

EPILATION

A Fifteen Year Comparative Evaluation of Electrolysis and Electrocoagulation

MEYER LOUIS NIEDELMAN, M.D.

PHILADELPHIA

Although Bordier[1] is mentioned by most writers as the first to make use of diathermy coagulation for the removal of superfluous hair, in 1924 Erdos-Brown[2] traced the history of the method as far back as 1910, when Eitner introduced a diathermy technic for epilation. However that may be, the method was introduced into the United States by Rostenberg[3] in 1925. It did not at first offer much competition to electrolysis, but, as apparatus and technic have been simplified and improved, diathermy coagulation at present bids fair to supersede electrolysis. At least this is almost the unanimous opinion of workers who are familiar with both methods. Electrolysis was first advocated by Michel, of St. Louis, in 1875, and it was put into practical use by Hardaway in the following decade. Electroylsis and diathermy coagulation are quite different in their effect on the tissues. Electrolysis has a chemical action, releasing caustic soda, whereas diathermy coagulation acts by generating heat, which can be controlled. The former is a less painful procedure, but it requires longer exposure to the current and a longer time to complete treatment, as not so many hairs can be removed at a sitting. Also, recurrence is claimed by some writers to be less common after electrolysis. However, the shorter exposure minimizes the pain of diathermy coagulation, and the shorter time required for removing hair compensates for the slightly higher incidence of recurrence. If a hair should return, a second treatment will usually take care of it.

In spite of the fact that in a test case[4] in New York the courts decided that "epilation by electrolysis (or diathermy coagulation) does not constitute the practice of medicine," there are many reasons why such treatment is less likely to fail or to have undesirable effects when practiced by a physician.

Beauty parlor operators, if planning to use this treatment, not only will need instruction in the relatively simple technic of epilation but must be informed as to the contraindications to such treatment and its potential dangers. There are, to be sure, many cases in which mild hypertrichosis, constituting but a slight blemish, may be safely treated and easily cured, but not infrequently hypertrichosis is a manifestation of systemic disease, which would probably be suspected at once by a physician and given proper treatment. The beauty parlor operator, knowing little or nothing of internal medicine, would not sense the danger lurking in attempts at epilation in patients suffering from diabetes, debilitating disease or focal infection.[5] Also, a tendency to keloid formation must be carefully evaluated, since scarring is more common in patients with this tendency. The special danger involved in removing hairs from the upper lip and nostrils, and the need for special

1. Bordier, H.: Nouveau traitement de l'hypertrichose par la diathermie, Vie med. 5:561, 1924.
2. Erdos-Brown, M.: Superfluous Hair. Removal with the Monopolar Diathermy Needle, Arch. Dermat. & Syph. 46:496 (Oct.) 1942.
3. Rostenberg, A.: Epilation with Diathermy: A Preliminary Report, Med. J. & Record 121: 751, 1925.
4. Medical Practice Acts: Removal of Hair by Electrolysis Not the Practice of Medicine, J. A. M. A. 110:839, 1938.
5. Cipollaro, A. C.: Electrolysis: A Discussion of Equipment, Method of Operation, Indications, Contraindications and Warnings Concerning Its Use. J. A. M. A. 111:2488 (Dec. 31) 1938.

aseptic precautions when one is operating on these areas, cannot be minimized, with a mortality rate for infections in these parts of nearly 75 per cent. The family of one man who died of erysipelas[6] after plucking a hair from his nostril was awarded accident insurance only on the conclusion that he had no knowledge of the possible results of such an act. What might be the fate of a beauty parlor operator or physician if a patient died of such a complication? It is true that penicillin has greatly diminished the mortality rate of infections of the upper lip and nostrils, however, an ounce of prevention is worth a pound of cure. The physician attempting epilation on a patient suffering from acne is likewise courting trouble.

In women hypertrichosis of the upper lip and face frequently develops after the natural or an artificial menopause. Beards and pubic hair develop in males only after puberty, and castrated males do not have beards. These facts point to a definite interrelationship between the sex glands and hair growth, and it has been demonstrated that other glands also, such as the thyroid and pituitary, play a role. Many of my female patients suffering from hypertrichosis are overweight and have menstrual disturbances, such as primary or secondary amenorrhea, dysmenorrhea or irregular menses, as well as male characteristics. These patients are of definite hypothyroid type, even though the basal metabolism is found in many cases to be within normal limits. Even after correction of their menstrual disturbances no change in hair distribution and growth occurs. At the present time there is no known drug that will cure hypertrichosis. The only method available for permanent removal of hair is therefore the destruction of the papilla and papillary vessels. Widely advertised depilatories only dissolve the hair shafts, never penetrating deeply enough to destroy the hair-producing papillae, and for this reason afford only temporary improvement. Nevertheless women make extensive use of these preparations, not only because of the simplicity of their use but because to their knowledge no other method is available. Depilatories may prove very irritating to the skin. In my opinion, the mechanical friction and irritation of depilatories and pumice stone serve to stimulate the hair papillae, so that the result obtained is not only coarser hair but hair which is more resistant to epilation by desiccation. Removal of hair by epilation forceps is likewise only a temporary measure, as the hair rapidly regenerates.

For women who object to epilation by electrolysis or desiccation I believe the best procedure is to shave or cut the hair very close and bleach fine hairs and lanugo with hydrogen peroxide. Concentrated hydrogen peroxide with 5 drops of ammonia water added to the ounce may be used, or an ointment containing hydrogen peroxide (33 per cent):

℞: Hydrogen peroxide concentrated 3.0
Cholesterinated petrolatum 30.0

This ointment is applied at night and removed in the morning. It must not be used near the eyes, as it may then cause conjunctivitis. Should irritation occur, it is better to alternate with unguentum aquae rosae. Some women prefer to use pumice stone. The affected area is lathered with soap for about five minutes. After this is removed, a fine film of glycerin is applied, and the skin is then polished with pumice stone. However, this method too is irritating and must be followed by liberal application of a mild cold cream or vanishing cream. The constant irritation has a destructive effect on the hair papillae, and may eventually produce atrophy.

6. Accident Insurance: Erysipelas Following Extraction of Hair, an Accident, J. A. M. A. 114: 2245, 1940.

Regrowth of hair may be prevented by daily shaving or by rubbing the surface with pumic stone for two minutes twice daily.

Let me emphatically state that roentgen rays, radium or kindred agents should never be employed for destruction of hair. The dose required for destruction of the papillae is of such strength and penetration that it causes destruction of the skin with all its sequelae. Such destruction of the skin may not be apparent immediately, but several years later the skin may become shriveled and dried up, giving an appearance of old age. Telangiectasis and even carcinoma may develop.

Indeed, in epilation, as in plastic surgery, a psychologic as well as a physical study of the patient is important. It will be necessary for the physician to protect himself by refraining from holding out too glowing a promise to his patient. In the first place, recurrence is to be expected in a proportion varying from 10 to 50 per cent. This recurrence may be real, owing to failure of the needle to destroy the papilla, or apparent, owing to growth of a new hair or to regrowth of a hair previously temporarily removed by the patient herself. The hyperemia induced by the treatment may stimulate surrounding hitherto imperceptible lanugo hairs to heavier and thicker growth, leading to a false impression of recurrence. All of these possibilities must be carefully explained to the patient. It must be kept in mind that what leads such patients to seek treatment is far from being mere vanity. Besides offending their personal esthetic sense, the blemish may offer a real hindrance to normal social and business life. The psychoses and inferiority complexes engendered may reach the point of mental disease. The present day attitude toward hypertrichosis has its roots far back in the history of mankind. A sinister association was attributed to women with excessive hair growth in ancient China, as evidenced by the images of demons. In India,[7] Arabia and other countries, women with hypertrichosis were forbidden to marry for eugenic reasons, probably because of the occasional association of this symptom with genital hypoplasia, masculine traits, pseudohermaphrodism, ovarian and adrenal tumor and other gynecologic conditions. However, that hypertrichosis has not always or everywhere been looked on as a stigma may be concluded from portraits painted by some of the older artists, in which women with delicate features and dignified pose were pictured with scant but definite beards.[8] Also, on ancient playing cards the queens are decorated with delicate moustaches and goatees. A little down on the upper lip of otherwise attractive women is considered piquant by some men. Nevertheless, the average woman hates this blemish. With the increased earning capacity of women due to war industries, an increasing number are applying for epilation.

Although epilation constitutes a more or less minor procedure, it does require good eyesight, a steady hand and considerable practice. Persons afflicted with poor eyesight, tremor or a nervous, irritable disposition should not attempt this treatment. It is suggested that it is well to practice inserting the needle into one's own hair follicles or at least to make test insertions in less visible areas on the patient's skin, such as the arm, before proceeding to treat the face.

Various high frequency apparatus have been recommended, and the currents vary from 10 to 70 milliamperes, depending on the judgment of the operator and tolerance of the patient. After the needle has been inserted the current is turned on by means of a foot switch pressed from a

7. Aschner, B.: Die Konstitution der Frau und ihre Beziehungen zur Geburtshilfe und Gynäkologie, München, 1924, p. 278.

8. Laignel-Lavastine: Les femmes a barbe, Aesculape, 15:69, 1925. Key, W.: La femme a deux barbes, Aesculape, 26:24, 1936.

fraction of a second to three seconds from two to six times according to the region to be treated and the sensitivity of the patient. Karp[9] advocated exposure to the current for one-third to three seconds, with two short foot pressures for the upper lip to five or six for the chin. I use a constant current the duration of which is from one to five seconds depending on the thickness of the hair. The choice of needles is likewise dependent on the preference of physician and patient. Some writers prefer insulated needles; however, the insulation may break, or the cutting current pass through it, and the added thickness of the insulating material increases the difficulty of inserting the needle. Those who prefer insulated needles are usually governed by the thought that there is less danger of scarring; this is more theoretical than real. Curved and bulbous needles have also been recommended. I use a straight, steel, noninsulated needle with a sharp point.

Various positions with relation to the patient are preferred by different workers, the main requisite being that the patient should be in a comfortable and relaxed position and the doctor in a position offering the best possibilities for seeing his field of operation and the easiest access. It is important that he should have some support for his arms. The most comfortable position is for the patient to lie with no head rest, the physician sitting behind her on a high stool, where he has a clear view of the area to be treated. In removing hair under the chin it may be necessary for the physician to sit in front of the patient. Having the patient seated in a chair is uncomfortable both for patient and for physician.

Patients who have been accustomed either to plucking the hairs or to using any other destructive method to remove them should be instructed to allow the hair to grow for not less than two weeks previous to epilation. The protruding hair will then indicate the direction of the bulb, facilitating exact introduction of the needle in this direction.

Theoretically, bright daylight affords the best illumination, but it is rarely available. Good artificial light is therefore most commonly used. Derow[10] recommended an adjusted shade lamp with Beebe's loop—I use the lamp exclusively — Gara[11] a floodlight of magnified type. Marton[12] advocated the use of a magnifying lamp which has an electric bulb and magnifying lens "arranged so that the light beam intersects with the focus of the magnifying lens." This brightly illuminates the field of operation, leaving the surrounding tissue in contrasting darkness. The lamp is said to be easily held and "can be trained on the site of insertion of the needle, bringing it into focus regardless of the plane the area is in." No matter how good the physician's eyesight may be, a magnifying electrified loop is of definite assistance in directing the needle in the proper direction. An operating mask which fits over the nose and mouth of the physician prevents him from breathing on his patient.

A number of gadgets have been devised for use in epilation, such as the thimble forceps of Shelton[13] and the combined epilation and forceps handle of Goldberg.[14] Marton described a flexible needle holder.

I have found the thimble forceps useful and use it routinely. The only comment I wish to offer is that the thimble should be brought down so that it extends about ½ inch above the tip.

---

9. Karp, F. L.: High Frequency Current in the Treatment of Hypertrichosis, Arch. Dermat. & Syph. 43:85, 1941.
10. Derow, D.: Short Wave Epilation, Arch. Phys. Therapy 20:101 (Feb.) 1939.
11. Gara, G.: Hypertrichosis: The Problem and How to Handle It as It Appears in the Every Day Practice, Urol. & Cutan. Rev. 45:771 (Dec.) 1941.
12. Marton, M. H.: Treatment of Hypertrichosis by Improved Apparatus and Technic, Arch. Phys. Therapy 21:678 (Nov.) 1940.
13. Shelton, J. M.: A Thimble Forceps for Epilation, Arch. Dermat. & Syph. 44:260, 1941.
14. Goldberg, H. C.: A Combined Epilation and Forceps Needle, Arch. Dermat. & Syph. 44:1104 1941.

After proper testing of the apparatus and inspection and sterilization of the needles, the operator cleanses his own hands and prepares the skin of the patient. The area to be treated should be washed with soap and water, followed by a fat solvent, and finally rubbed with alcohol. In inserting the needle, the operator is guided by the direction of the hair stump, the hair having been clipped a short distance from the root, as it emerges from the follicle. With persons of blond complexion, the operator may be aided in locating the exact entrance to the follicle by marking the pores with fine 5 per cent Japanese lamp black in vanishing cream.[10] This is applied and then wiped off, leaving the pores marked as black specks. After treatment is completed, the specks can be easily washed off with soap and water. I have found that mascara and color rinse are of value for coloring light hair. Color rinse darkens the hair follicles and lanugo hairs, while mascara is used for the coarser hairs. I usually use the dark shade of color rinse, which is applied with a piece of cotton and allowed to dry. It will be noted that the hair follicles stand out in a sharp contrast to the surrounding skin. The color is later removed either with a dye remover or with carbon tetrachloride. The mascara is applied to the hairs, and after treatment the area is washed with soap and water. The needle should slip along the shaft of the hair without resistance till it reaches the neck of the follicle and enters the papilla. It should be inserted from 2.5 to 4.5 mm. I have found it useful to demarcate this length by applying several coats of nail lacquer about 1/16 inch in length and coating the surface with red nail polish enamel. The needle should always reach the papilla but may pass slightly beyond it; however, if it does not reach the vicinity of the papilla, regrowth will take place.

After numerous measurements I have found that the hair root extends 1/8 inch below the surface; therefore, it is necessary that the needle be inserted to this depth in order to insure complete destruction.

I feel that the removal of fifty hairs at one sitting is sufficient, and the sittings should be widely separated. The removal of from three to five hairs in a 1/4 inch radius is sufficient. A fifteen minute treatment is what the average patient can stand. A period longer than this becomes very uncomfortable both for patient and for physician.

Slight bleeding at the introduction of the needle proves that one has not entered the hair shaft. The needle should not be reintroduced, as this would lead to greater danger of infection. With the needle in position, the current is switched on for the time determined as optimal for the individual patient. If the hair has reached the follicle slight traction should easily remove it. Inspection will reveal whether the treatment has been successful. After disconnection of the current, the needle is removed. Many small hairy moles can be removed by merely removing the hair and stepping up the current just a trifle. Removal of hairs from parts of the body other than the face is often requested. Hair between the eyebrows is in some instances regarded as a greater blemish than hair on the chin. Hairs can also be removed from the sternal region and from the areola of the breast. I have seen no harmful results of this procedure.

Patients vary in their reaction to epilation. Persons with vasomotor disturbances and hypotension are most likely to have redness and rash, which disappear rapidly. In other patients red spots and scabs may persist for seven or eight days after treatment. Immediately after treatment the area should be bathed with alcohol, then dried and treated with a skin-colored lotion containing 1 per cent phenol and 0.12 per cent mercury bichloride. A similar shake lotion may be applied for twenty-four to seventy-two hours

after treatment, especially at night. The following is an illustrative prescription:

℞:	Mercury bichloride	0.1
	Bentonite and Ferric oxide	4.0
	Glycerin	12.0
	Purified talcum	
	Zinc oxide	24.0
	Alcohol	42.0
	Water	42.0

If the patient complains of excessive pain on introduction of the needle the current may have been too strong or the needle may have been inserted too deep. It is of great importance to determine accurately the proper depth for insertion of the needle, as if it is not inserted far enough the coagulation will take place too near the surface of the skin, leading to visible scar formation, and if it passes far beyond the papilla the nutrient vessels and nerves of the papilla will not be destroyed, and there will be an opportunity for a new hair to grow.

Opinions differ as to the number of hairs to be removed at one sitting. It is important, in the first place, not to remove at the same sitting, hairs placed too near to one another, as to do so may cause swelling and inflammation. It is wise to remove only twenty-five hairs at a first sitting and then gradually increase the number to one hundred in succeeding sittings at intervals of seven days. Derow[10] removes fifty to one hundred hairs at intervals of eight to ten days. The patient should be given some idea of the probable time that may be required for treatment. Gara[11] stated that "to remove the hairs from a fairly thickly covered chin at the rate of two sittings per week of 15 to 25 minutes' duration might take 12 months." I am in agreement with his views. In some cases there may be thirty to forty hairs per square centimeter on the chin. The various causes and possibilities of recurrence must be carefully explained to the patient in order to prevent premature discouragement and abandonment of treatment.

Erdos-Brown[2] has reviewed the progress made in the type of apparatus employed for diathermy coagulation for epilation, from the spark gap diathermy machine with two electrodes to the vacuum tube diathermy apparatus. I am using a machine similar to the latter. With a monopolor vacuum tube apparatus, the hair follicle can be destroyed in one-twentieth to one-fifth of a second. Only one electrode is required and the current is varied to suit the individual patient. With this apparatus patience and skill are necessary to determine the threshold of destruction of the papilla. The amount of current required for instantaneous destruction of each hair can then be adjusted by means of the rheostat. Short wave machines are unsuitable for this method unless they have a separate desiccating unit attached. The conventional diathermy machines, both of the large and small types, are not suitable for epilation providing that their current has been specially adjusted not only as to an exact quantity of output but also as to the quality. The current must be very fine and even, without any gross oscillations. No doctor should permit himself to be mislead that he can do epilation with these machines. A deviation from these premises can only result in disaster.

Recurrence is less common after electrolysis than after coagulation. With the former, I have found it to be about 10 per cent; with the latter it may be as high as 50 per cent in unskilled hands. This is probably due to the fact that with electrolysis the needle is allowed to remain in contact either with the bulb or with the immediate surrounding area for a longer period, usually from thirty seconds to one minute, affording greater opportunity for destruction of the papilla and capillary loop, while in coagulation the contact

is instantaneous, and if the needle is not in exact position a recurrence is likely. For the inexperienced operator, electrolysis is by far the safest method. However, one must be careful to avoid tattooing the skin if the electrode is used on the positive pole, as this will lead to deposition of iron oxide around the needle.

Although the duration of treatment is greater with electrolysis, the treatment is less painful because of the low milliamperage. The patient seems to tolerate a fifteen minute electrolysis treatment better than a coagulation treatment, and since more hair can be removed at one sitting with the latter, the duration of total treatment is reduced. Scarring and pitting may occur more commonly with coagulation than with electrolysis, because the current employed is much stronger and more heat is produced. Infections of the skin, especially small pustules and crusts, and also marked erythema, are much more common after coagulation than after eelctrolysis. This is due to the fact that there is more destruction of the skin surface and a port for infection to enter thus created. However, this can be minimized by using a milder current, by removing hairs not too close together, by not removing too many at one time and by prescribing for the patient an antiseptic mercury bichloride lotion or an allantoin-sulfanilamide-sulfathiazole ointment.[15]

Kovács was of the opinion that high frequency epilation is much speedier and less painful and causes much less reaction than electrolysis and may be used as a method of preference by skilled operators.[16] Although I have never seen keloidal formation after electrolysis, I have observed one small keloid about 1/16 inch in diameter on the chin of a young blond girl after the removal of a hair by coagulation by another physician. This is a distinct possibility in patients with a tendency toward keloidal formation if the current is not properly adjusted or if the needle is inserted too superficially. It must always be borne in mind, and the patient should be questioned with regard both to previous keloids and to hypertrophied scars.

Many patients with hypertrichosis are suffering from some glandular dysfunction. To date, however, no treatment is known that will either stop the hair from growing or remove the hairs already present. It is essential not to promise the patient too much, as there may be a new growth of hair even after all hair present has been destroyed.

Summary and Conclusions

From my experience over a period of fifteen years with the use of various methods of epilation, especially electrolysis and electrocoagulation, I have come to the conclusion that the method of choice for epilation is electrocoagulation. The comparative advantages and disadvantages of electrolysis as compared with electrocoagulation have been discussed. As aids in technic, I have found coloring the finer and light hairs with mascara and hair rinse to be of value in showing the proper angle for insertion of the needle. Also, a method of demarcating the depth of the needle to be inserted is outlined. Electrodesiccation should not be attempted by the inexperienced.

500 Central Medical Building.

15. Niedelman, M. L., and Horoschak, S.: Allantoin-Sulfanilamide-Sulfathiazole Ointment in Pustular Dermatoses, Urol. & Cutan. Rev. 48:172 (April) 1944.
16. Kovács, R.: Electrotherapy and Light Therapy, Philadelphia, Lea & Febiger, 1942, p. 638.

MEDICAL NEWS

New York Society of Physical Medicine

The May meeting of the New York Society of Physical Medicine was held May 2 in the New York Academy of Medicine Building.

A symposium on low back pain in its several aspects was presented. The speakers and their subjects were: Orthopedics, Samuel Kleinberg, M.D. (by invitation); Medicine, Morris Dinnerstein, M.D. (by invitation); Neurosurgery, Leo M. Davidoff, M.D. (by invitation); Radiology, Maurice M. Pomeranz, M.D. (by invitation), and Manipulative Procedures, Henry P. de Forest, M.D. (by invitation).

The discussion was opened by C. Ward Crampton, M.D. (by invitation).

Lieut. Col. Bilik at Thayer

As their contribution to the war effort, more than 70 Peabody college girls are helping to make possible the more rapid and thorough recovery of wounded servicemen at Thayer General Hospital through their work as volunteer aides in the physical therapy clinic and gym each day.

Instigator of the unique plan of using college students in the physical therapy department in an attempt to overcome the shortage of trained technicians is Lt. Col. S. E. Bilik, who heads the Thayer physical therapy staff.

The physical therapy students go to Thayer Hospital twice a week where they put into practice what they have learned in the course. They are assigned to specific patients and assist supervising commissioned therapists in giving massage treatments and exercise with technical apparatus.

Colonel Bilik says of the girls "they are making excellent progress, and the availability of these volunteers has made it possible for the hospital to give more treatments with incalculable benefits to the patients."

Sparkman Urges Program for Physically Handicapped

The need for a national program of rehabilitation for the physically handicapped was likened by Representative John J. Sparkman of Alabama to the national need for a program of rehabilitating physical resources, forests, soil and water, which brought the Tennessee Valley Authority to his district. Addressing the Washington Lodge of the American Federation of the Physically Handicapped, in the National Press Club lounge, he said "Only ignorance of the situation has caused us to lag so badly in rehabilitation of human beings." Under present rehabilitation laws an average of 8,500 persons a year have been rehabilitated and "made self respecting, productive taxpayers," he said. However, "casualties on the home front have been 800,000 a year." He expressed confidence that the House will continue a study of the problem begun last session by a subcommittee under Representative Augustine B. Kelley of Pennsylvania. Capt. Howard H. Montgomery, Navy officer in charge of rehabilitation, outlined the Navy's program to return disabled men to usefulness, and Earle M. Sawyer, Civil Service Commission consultant, told of placement of handicapped in federal service.

Administration Starts Its Own Probe of Veterans' Hospitals

The administration moved quickly to conduct its own investigation of magazine charges that veterans are receiving improper treatment in government hospitals. Representative Rankin, Democrat of Mississippi, announced that the House World War Veterans Committee, of which he is chairman, will investigate, following the announcement by Veterans Administrator Frank T. Hines that he had ordered a sweeping probe into all veteran hospital facilities throughout the country.

Derrick Vail Named Professor of Ophthalmology at Northwestern

Dr. Derrick T. Vail, Jr., colonel in the Army medical corps and chief consultant to the Surgeon General in ophthalmology, has been appointed professor of ophthalmology and chairman of the department at Northwestern University Medical School. He will succeed the late Dr. Sanford R. Gifford, who was professor of ophthalmology at the medical school from 1929 until his death in February, 1944.

Robert Brown Named Medical Director at St. Luke's

Dr. Robert F. Brown, assistant superintendent of the Stanford University Hospital, San Francisco, has been appointed assistant administrator and medical director of St. Luke's Hospital, Chicago, effective March 15. Dr. Brown graduated at the University of Oregon Medical School, Portland, in 1938, becoming assistant to the superintendent of Stanford University Hospitals in July, 1942 and assistant superintendent in December, 1943. Dr. Ambrose P. Merrill resigned as medical director January 1.

New Lightweight Artificial Leg

The War Department stated recently that an improved artificial leg, made of light metals, plastic or fiber, will shortly be made available

(*Continued on page 300*)

PRELIMINARY REPORT
of the
COMMITTEE ON TERMINOLOGY
of the
SOCIETY OF PHYSICAL MEDICINE

At the 1944 meetings of the American Congress of Physical Medicine and the Society of Physical Medicine at Cleveland a general desire was expressed to find or coin a one word term to identify a physician practicing physical medicine, just as the term of internist or pediatrician signifies physicians practicing internal medicine or pediatrics.

The need for such a comprehensive term was precipitated by the fact that the U. S. Army now denotes its physical therapy technicians or aides simply as physical therapists, thus adding to the confusion already existing by the indiscriminate use of this term to signify technicians instead of physicians.

The Special Committee on Terminology was appointed by the Society of Physical Medicine at the Cleveland meeting to study the problem and bring in some recommendations. Among the possible new terms proposed at the meeting and in previous writings were physicologist and physiatrist.

The Committee endeavored to approach the problem by consulting competent bodies and individuals in the United States and in England, and received interested cooperation from all the sources contacted: The Council of Physical Medicine of the American Medical Association, Dr. Edwin P. Jordan, Assistant Editor of the *Journal of the American Medical Association* and Editor of *Standard Nomenclature of Disease*, Dr. Iago Galdston, Executive Secretary of the New York Academy of Medicine, and finally from the Council of the British Association of Physical Medicine and its Secretary, Dr. P. Bauwens.

The consensus of opinion of those consulted is in favor of the term "physiatrics," as already existing in standard dictionaries, and defining "the science that relates to the medicinal and curative forces of light, heat and electricity." Consequently the term "physiatrist" appears to be the most appropriate and euphonious as denoting the practitioner of physiatrics or physical medicine. The Council of the British Association of Physical Medicine is at present consulting the Editor of the Oxford Dictionary and the British Medical Association about the etymological correctness of this term before putting it for final adoption before the Group Committee on Physical Medicine.

The Special Committee on Terminology of the Society of Physical Medicine will recommend the adoption of the term "physiatrist" at the next annual meeting. It is publishing this preliminary report in order to solicit further discussion and advice from the membership of the Society of Physical Medicine as well as from that of the American Congress of Physical Medicine.

Respectfully submitted,

RICHARD KOVACS, M.D., Chairman;
K. G. HANSSON, M.D.;
WILLIAM SNOW, M.D.

New York, May 1st, 1945.

ARCHIVES of PHYSICAL MEDICINE
OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

.·. EDITORIALS .·.

PHYSIATRIST VS. PHYSICAL THERAPIST

The report of the Committee on Terminology of the Society of Physical Medicine, published in this issue of the ARCHIVES[1] represents a timely forward step in the measured progress of Physical Medicine. It is significant that an editorial in the ARCHIVES pleaded seven years ago[2] for the adoption of the term physiatrist and the caption of the present editorial was made identical to pay tribute to the foresight of our Editor Emeritus. That editorial pointed out that the adoption of the new term involves neither legal nor philologic obstacles and it offers a dignified designation that implies recognition and management of diseases in which physical remedial measures are indicated. Circumstances were not as ripe for action on that proposal seven years ago, as they are now. The appointment of a Committee on Terminology last year came as a response to a desire for a one word term, repeatedly expressed in discussion and in correspondence. The Committee has proceeded with due deliberation; it consulted recognized authorities in the United States and across the Atlantic. It is in keeping with the present spirit of international cooperation, that the adoption of a new term affecting English speaking nations should be done by international consultation. A proof that a desire for the new term also exists in non-English speaking countries appears in a recent article[3] published abroad, which states: "Instead of the composite term 'physical therapy' the short term physiatry has been used on the Continent. It is derived from 'physis' (nature) and 'iatreia' (healing) and means treatment with forces of nature. Physical therapy of nervous disorders could therefore conveniently be termed 'neurophysiatry'." This quotation also shows some future possibilities of the adoption of a one word term.

It is to be hoped that the publication of the Report of the Committee on Terminology will evoke a favorable response from the membership in general and bring about the formal adoption of the new term. It is also fervently to be hoped, that simultaneously or not much later, definite action will be taken on the one remaining obstacle in the path of the final recognition of the status of the practitioners of physical medicine as full fledged specialists in a field of medicine: the formation of a qualifying board on physiatry.

1. Preliminary Report on the Committee on Terminology of the Society of Physical Medicine, Arch. Phys. Med. 26:298 (May) 1945.
2. Physiatrist vs. Physical Therapist, Edit. Arch. Phys. Therapy 19:107 (Feb.) 1938.
3. Wellisch, E.: Physical Therapy in Relation to Psychological Medicine, Med. Press & Circular (London) 212:413 (Dec. 27) 1944.

RECONDITIONING OF CIVILIAN PATIENTS

Among the tangible benefits of the World War II to the civilian population will be the impetus of the medical discoveries and experiences connected with it. A scheme of future reconditioning in civilian hospitals, modeled after large scale wartime experience, is impressively presented by Gwynn in this issue of the ARCHIVES. It coincides with a new movement radically to change the prevailing conception of convalescence as prac-

tically synonymous with rest. There are vast and hitherto practically untouched opportunities for mental and physical reconditioning for patients in hospitals of every description by physical therapy, occupational therapy and psychotherapy. Since the close cooperation of occupational therapy with physical therapy, another result of wartime experience, is already well on the way, the main features of a well organized reconditioning program would automatically fall into the enlarged scope of the departments of physical medicine. It should therefore behoove all practitioners of physical medicine, physiatrists if you please, to make an early interest in this pending development, for as Gwynn correctly points out, the director of a reconditioning service should be a medical man, who has had training and experience in physical education and physical medicine and has at least an intelligent interest in psychiatry.

1. Gwynn, H. B.: Reconditioning in Civilian Hospitals, Arch. Phys. Med. 26:275 (May) 1945.

Medical News

(*Continued from page 297*)

to amputees of the Army. The new prosthesis is the result of study and recommendations made by the National Research Council, National Bureau of Standards, artificial limb manufacturers, scientists, army and navy surgeons and the Veterans Administration and will be standardized for use by the Army. It provides the best innovations and improvements of the cushion built leg now in use, and the important factors studied were interchangeability of parts, light weight, quality and strength of materials.

Reconditioning the Mind Speeds Soldier Convalescence

According to Col. Augustus Thorndike, director of the Reconditioning Consultants Division, Office of the Surgeon General, reconditioning the mind, supplementing reconditioning the body, is the newest ally to obtain rapid convalescence. Major W. S. Briscoe, who is in charge of the program, stated that the task of the educational reconditioning program is to return the soldier, either to active army service or to civilian life, mentally alert. Under this porgram mental activities gradually increase as the soldier's needs for physical reconditioning from his injury taper off. Class 4 patients (confined to bed) have at first merely simple entertaining types of activity that will help them overcome and forget their anxieties about their injury and their future.

The Army's Reconditioning Program

Soldiers recovering from battle wounds are making up credits toward obtaining high school and college diplomas while in convalescent hospitals, as part of the Army's reconditioning program. The curriculum offered by the program includes music, printing, automotive merchanics, business and army administration, electricity, photography, carpentry, pattern making, watch repairing, metal working, lettering and sign writing, welding, canvas and leather working and drafting. Patients are not held in army hospitals to complete any course of study. When they have reached the maximum benefit of hospitalization they are returnd to duty.

Wounded soldiers, now being evacuated from overseas at the rate of more than 33,000 a month, first are sent to one of sixty-four general hospitals best suited for the special type of treatment required. When a patient has recovered sufficiently and no longer requires daily ward care, he is removed to a convalescent hospital.

University of Washington Medical School

The present legislature has been asked to appropriate $450,000 to maintain the proposed school of medicine and dentistry at the University of Washington, Seattle. This sum, it is expected, would maintain the school for two years. At ensuing sessions of the legislature it is hoped to obtain additional appropriations of $3,700,000 for maintenance and improvement.

Education of Medical Officers

Col. G. R. Gessner reported that the Army is readjusting the specialties practiced in its general hospitals and increasing and readjusting the size of the facilities now available. The Surgeon General has deferred any further action until a little firmer basis can be found on which to work before establishing a program of this type in Army hospitals. With the publication of Army Service Forces Circular No. 41 on Feb. 5, 1945 refresher professional training was authorized for officers of the Medical Corps who for the past twelve months or longer have been in administrative or command positions and who it is

contemplated would be reassigned to professional duties. This training will be given in hospitals in both medicine and surgery and will be voluntary and available to any officer of the Medical Corps, with priority given to those who have been overseas. Such officers will be ordered to temporary duty to take the course of instruction on their own request and will be continued in active service.

Brig. Gen. Fred W. Rankin stated that the refresher course plan has nothing to do with the specialties, and that the Army has no intention of putting these men into a type of specialized training that would qualify them for specialty board certification.

Wartime Graduate Medical Meetings

Dr. W. T. Graham spoke at A. A. F. Regional Hospital, Langley Field, Virginia, March 30, on the subject of "Preservation and Restoration of Function of the Extremities.

Dr. Milton C. Borman spoke on the subject of "Arthritis," March 14 at the Station Hospital, Truax Field, Wisconsin. On March 28, at the same hospital Dr. Geza de Takats spoke on the subject "Peripheral Vascular Disease."

New Dean at Western Reserve

Dr. Joseph Treloar Wearn, professor of medicine at Western Reserve University School of Medicine, Cleveland, has been appointed dean of the medical school, succeeding Dr. Rorald H. Sollmann, who retired as dean on July 1, 1944. Dr. Wearn will continue as professor of medicine at the university and as director of the department of medicine at Lakeside Hospital.

University of Illinois College of Medicine

The fifth semi-annual refresher course in laryngology, rhinology and otology was held March 26 to 31. While the course was largely didactic, some clinical instruction was included. Dr. A. R. Hollender is Chairman, refresher course committee, Department of Otolaryngology, University of Illinois College of Medicine.

Advisory Council on Medical Education

At a meeting of this Council held in Chicago, February 11th, Dr. E. M. MacEwen, dean of the College of Medicine, State University of Iowa, and chairman of the Executive Council of the Association of American Medical Colleges, was elected president. Dr. Maurice H. Rees, dean University of Colorado School of Medicine, was re-elected vice president; Dr. R. C. Buerki, dean of the Graduate School of Medicine, University of Pennsylvania, was re-elected secretary-treasurer.

University of Chicago Medical School

Among the recent changes in the Division of Biological Sciences, including the University of Chicago School of Medicine, are the appointment of Dr. William H. Taliaferro, Eliakim Hastings Moore distinguished service professor of parasitology, as adviser to the president in the biological sciences. The deanship vacated by Dr. Taliaferro has been assumed by Roland W. Harrison, Ph.D., professor of bacteriology, who has been acting dean of the Division of Biological Sciences. Dr. Arthur C. Bachmeyer will continue as associate dean of the division and director of the university clinics, spending part time until 1946 as director of study for the Commission on Hospital Care.

University of Wisconsin Medical School

The school announces plans for refresher courses and postgraduate training for physicians returning from service and for those in civilian practice. Four plans have been set up: a refresher course of twelve weeks' duration, a two to six month course for specialists, residencies and basic science training. The refresher course for general practitioners covers medicine, neurology and psychiatry, pediatrics, general surgery and allied specialties and obstetrics and gynecology. The course for specialists is open only to those who have already had training in their specialty and is designed as a review and refresher course in the various specialties. The division for residencies is for those who wish to acquire specialty training for certification; three year residencies in all of the specialties will be available. It is the plan to increase the number of residencies from a prewar number of approximately forty to approximately sixty. As in the past, in basic science training the preclinical departments are open to properly qualified men and women who wish to work for one year or more on any project in which they are interested.

Orthopedic Rehabilitation

Dr. Vasili D. Chakhlin, director of the Moscow Orthopedic and Prosthetic Institute, and Dr. Philip D. Wilson addressed the New York County chapter of the American-Soviet Medical Society, recently on "Reconstruction by Orthopedic Treatment." The film "Soviet Medicine at the Front" was also shown at the meeting.

Columbia University College of Physicians and Surgeons

A grant of $14,500 has been received from the Commonwealth Fund of New York to be applied to the study of respiratory physiology in the department of medicine.

Physical Therapy as a Career for Women

The role of the physical therapist as the new career woman in the health field will be stressed by women's organizations throughout the nation in connection with the award by The National Foundation for Infantile Paralysis of scholarships to relieve the critical shortage of trained specialists in this form of treatment, it was announced by Basil O'Connor, president of the National Foundation.

"The young woman who takes advantage of the free training for nine or twelve months in an approved school has a lifetime career cut out for her," said Mr. O'Connor. "The physical therapist may work in a hospital, clinic, or a physician's office.

This branch of medicine is uncrowded and will remain so for many years because of the increasing extent in which physical therapy is being applied to the treatment of diseases and injuries.

"The tuition, living expenses, books and transportation of qualified students will be provided, according to their needs, through the scholarships which have been made possible by contributions to the annual March of Dimes. The students will learn the theory and practice of hydrotherapy, electrotherapy, radiation therapy, scientific massage and corrective exercise. They will study the relation of medicine, anatomy, pathology, neurology, orthopedics and surgery to physical therapy procedures; and will round out their curricula with psychology, ethics, administration and elective subjects. The courses include lectures and laboratory work, followed by practical experience in hospitals and clinics under the guidance of physicians and physical therapists.

"The need for physical therapists has been made more acute within the past year by the tremendous program for rehabilitation of the war wounded, by the increased use of physical therapy in industrial medicine and by developments in the treatment of infantile paralysis, both during the acute phase of the disease and in after-care. Acceptance of a scholarship does not put the student under any obligation to work only with infantile paralysis cases on completion of training, but it is hoped that in the event of an epidemic the services of the graduates will be available during the emergency.

"It is impossible to foretell when and where epidemics of infantile paralysis will strike or how serious they will be. For that reason the National Foundation recognizes the need to have physical therapists established in areas all over the country, and has set aside $1,267,600 to aid in their training. These young women will occupy respected and financially satisfying places in the communities and will be a first line of defense against the effects of poliomyelitis whenever and wherever it strikes."

Mr. O'Connor disclosed that women's clubs and other community, civic and professional organizations would aid in popularizing the importance of physical therapy as a career and in recruiting candidates for scholarships. Applicants must have at least two years of college, including biology and other basic sciences, or be graduates of nursing or physical education schools. They may apply to the National Foundation, 120 Broadway, New York 5, N. Y., or to the American Physiotherapy Association, 1790 Broadway, New York 19, N. Y.

Army Training Reconditioning Instructors

According to the Office of the Surgeon General, the Army now has 680 officers and 1,486 enlisted men who are graduates of training courses in physical and educational reconditioning. More are constantly being trained not only to take care of the increasing number of convalescents in army hospitals but to replace instructors called to general duty. Because able bodied instructors in educational reconditioning are subject to reassignment at any time, every effort is being made to fill these posts from the army rolls of physically disabled. These handicapped instructors, many of whom suffered amputations, are particularly inspiring to the convalescent soldiers they instruct.

Physical Therapists in Hospitals — 1944*

	Physical Therapists Full Time	Part Time
Alabama	27	9
Arizona	19	7
Arkansas	21	5
California	369	68
Colorado	78	41
Connecticut	45	10
Delaware	10	3
District of Columbia	36	4
Florida	87	17
Georgia	67	19
Idaho	7	1
Illinois	187	36
Indiana	63	12
Iowa	34	10
Kansas	33	15
Kentucky	27	6
Louisiana	39	4
Maine	17	10
Maryland	51	8
Massachusetts	123	28
Michigan	99	17
Minnesota	43	19
Mississippi	27	9
Missouri	89	25
Montana	8	6
Nebraska	24	11
Nevada	3	2
New Hampshire	11	8
New Jersey	114	29
New Mexico	14	.....
New York	443	89
North Carolina	68	7
North Dakota	8	9
Ohio	119	22
Oklahoma	57	9
Oregon	20	6
Pennsylvania	167	61
Rhode Island	20	6
South Carolina	31	3
South Dakota	11	10
Tennessee	53	15
Texas	145	20
Utah	18	1
Vermont	8	3
Virginia	92	3
Washington	77	13
West Virginia	37	4
Wisconsin	60	26
Wyoming	14	1
Totals (1944)	3,220	747
(1943)	2,905	719
(1942)	2,643	772
(1936)		2,382

* Reprinted, J. A. M. A. 127:781 (Mar. 31) 1945.

Convalescent Hospital — Revised Program

The convalescent hospital program outlined in letter, Surgeon General's Office, August 4, 1944, to service commands headquarters has been revised and augmented by ASF Circular No. 419, December 22, 1944. Among other things, this circular includes a number of charts of proposed programs on (1) business education, (2) metal working, (3) wood working, (4) agricultural education, (5) graphic arts, (6) electrical education, (7) auto mechanics education, and (8) charts outlining the organization of a convalescent hospital. The circular reviews also the basic principles of reconditioning and outlines the purposes of the various divisions and sections.

H. A. Simons

H. A. (Hi) Simons, President of the Year Book Publishers, Inc., Chicago, died suddenly of a coronary occlusion on April 4.

Born in St. Paul, Minnesota on May 26, 1894, he was one of a family of nine children. A few years later the family moved to Bemidji, Minnesota, then a lumber town, where his father began the practice of law. While still a young boy, Mr. Simons' interest in writing and anything connected with it led him to become a printer's devil on the Bemidji newspaper, and within a few years he was made editor. At eighteen he left home and worked for various newspapers such as *The St. Paul Post-Dispatch, The Milwaunkee Journal* and the *Chicago Journal of Commerce.*

In 1923 he married Helen Head, the daughter of C. J. Head, founder of The Year Books. Then in 1929 with his wife and daughter, he went to France and Italy and Greece for two years where he pursued his personal interest in art, architecture and his own work in literary criticism.

Following their return in 1931, Mr. Simons entered the Year Books as general manager and began with pioneer zeal to increase the list of Year Book titles. On the death of Mr. Head in 1937, Mr. Simons took over the presidency of the firm, and in the past eight years has expanded its activities to include beside the Year Book series, medical monographs, general practice manuals, and a series of radiology texts. His high regard for the medical profession and his interest in publishing books of the highest quality medically and aesthetically resulted in the great text, *Medical Physics,* which was published last spring and was hailed by the profession as the foundation for that young field of medical science. He had a keen sense of values and coming developments and his inauguration of *The Year Book of Physical Therapy,* now changed to *The Year Book of Physical Medicine* was greatly appreciated by those vitally interested in this field of medicine and gave it a decided new impetus. The American Congress of Physical Medicine joins in sincere expression of regret over the passing of a good friend and a distinguished publisher.

National Council on Rehabilitation

Annual Meeting—May 9-10, 1945

A. Keynote remarks by the President, Philip L. Wilson, M.D.

B. Minutes of 1944 Annual Meeting.

C. Report of Executive Committee.

D. Report of Treasurer.

E. Report of Nominating Committee.

F. Report of Committee to Define the Processes of Rehabilitation, Miss Evelyn C. McKay, Chairman.

G. Report of Committee on Personal Qualifications, Standards and Facilities for Training, Mr. Holland Hudson, Chairman.

H. Report of Committee on Compensation, Mr. Harry H. Howett, Chairman.

Afternoon Session

A. Old Business.

1. Election of Officers.

2. Election of Executive Committee.

3. Election of Nominating Committee for 1946.

B. New Business.

1. Introduction of Executive Director, Mr. David R. Salmon.

2. Unrehearsed symposium regarding the affect on civilian rehabilitation of Public Law 113.

Thursday, May 10—Morning Session.

A. Discussion of report of Committee to Define the Processes of Rehabilitation.

B. Discussion of report of Committee on Personnel Qualifications, Standards and Facilities for Training.

C. Discussion of report of Committee on Compensation.

Afternoon Session

A. Unrehearsed symposium on the rehabilitation of veterans.

The Nominating Committee suggests for 1945-6: for persons to serve as members of the Executive Committee for a term of three years: Mr. Holland Hudson, Colonel John N. Smith, Jr., and Dr. Philip D. Wilson.

For officers for the ensuing year: President, Dr. Philip D. Wilson; First Vice-President, Colonel John N. Smith, Jr.; Second Vice-President, Miss Hazel E. Furscott, and Secretary-Treasurer, Hr. Holland Hudson.

Communication From The Chartered Society of Physiotherapy

The Chartered Society of Physiotherapy (formerly called the Chartered Society of Massage and Medical Gymnastics), which was incorporated by Royal Charter in June, 1920, and is the recognized governing body of the Profession of Physiotherapy, is a founder member of the Board of Registration of Medical Auxiliaries, which was incorporated in March, 1936, under the Companies Act.

The Chartered Society has resigned its membership of the Board of Registration of Medical Auxiliaries as from January 1, 1945, and has withdrawn its name as a Recognized Qualifying Body

and also its qualifications from the Board's List of Recognized Qualifying Bodies.

The Chartered Society is, by the term of its Royal Charter, compelled to maintain a Register of its members, and no person is entitled to be registered unless he or she has passed the Chartered Society's examinations. This Register has been regularly kept, and a Directory of Members is printed and circulated to Medical Practitioners, Hospitals and other employing authorities. The Directory contains the names, addresses and qualifications of all Chartered Physiotherapists at the time of publication, and is therefore the most complete record available at all times.

The Chartered Society will continue regularly to publish and circulate its Directory and our object in writing to you is to call your attention to the fact that as from January 1, 1945, the Chartered Society's Directory will be the only complete record available concerning Chartered Physiotherapists.

Physical Therapist Wins Exchange Fellowship

Miss Marian Williams, Palo Alto, Calif., instructor in the Division of Physical Therapy, Stanford University, has been awarded the first international exchange fellowship in physical therapy offered by the National Foundation for Infantile Paralysis.

Miss Williams is en route to Toronto, Canada, to begin one month's work at the Workmen's Compensation Board Clinic. Mrs. Mary Clinckett, supervisor of physical therapy at the Toronto Clinic, will arrive shortly to take Miss Williams' post at Stanford.

Miss Williams is a graduate of Scripps College in Claremont, Calif., and a graduate of the physical therapy school at Children's Hospital, Los Angeles. She received her M.A. in physical therapy at Stanford, where she has been on the staff for the past three years.

The exchange fellowship is one of twelve which will be offered this year by the National Foundation, supported by the annual March of Dimes, as part of its new program for general development of the field of physical therapy. In addition to the exchange fellowships, the National Foundation also is offering scholarships for the training of physical therapists, of whom there is a critical shortage, as well as a limited number of teaching fellowships to provide additional instructors for approved schools of physical therapy in the United States.

All twelve exchange fellowships will be with the Toronto clinic, where "a well-coordinated program of physical and occupational therapy has been operating for some time" according to Miss Catherine Worthingham, former director of the Stanford University Division of Physical Therapy, now director of technical education for the National Foundation in New York. Dr. Harold D. Storms is director of the Toronto clinic.

"The relationship between physical therapy and occupational therapy, and coordination of the two fields, is one of the most challenging subjects for research and study now confronting us," said Miss Worthingham. "This opportunity for physical therapists and occupational therapists of Canada and the United States to study each other's methods and report to their respective groups on innovations, experiments and results, should result in more widespread knowledge on this phase of rehabilitation of the injured, sick and disabled of both countries."

Although only members of the staffs of approved schools of both physical and occupational therapy are eligible for these awards, young men and women with at least two years' college work including biology and other sciences, graduates of accredited schools of nursing and physical education, may apply for physical therapy training scholarships by writing to the National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y.

General Foster Honored by City

Brigadier General George B. Foster, Jr., U. S. A., Commanding Officer of O'Reilly General Hospital, Springfield, Mo., was chosen Springfield's "outstanding citizen and man of the year" and awarded an engraved bronze plaque by the Springfield Chamber of Commerce for his activities in coordinating the welfare of the hospital with that of the community, giving an "unusual measure of devotion to the advancement of Springfield and the Ozarks."

In paying tribute to General Foster at the award dinner, Major General C. H. Danielson, Commanding Officer of the Seventh Service Command said he had distinguished himself "as an administrator, as a medical man and as a leader . . . who has become a part of this community . . . and a compelling force."

Establish Committee on Prosthetic Devices

A study of the problems associated with providing war veterans with artificial limbs has been initiated, on request of the Surgeon General of the Army, by the National Academy of Sciences and the National Research Council, through a newly established Committee on Prosthetic Devices. The committee will represent jointly the Division of Engineering and Industrial Research and the Division of Medical Sciences of the council, and its activities, including the necessary research entailed in the project, are supported by the Office of Scientific Research and Development, through the latter's Committee on Medical Research.

Chairman of the committee is Dr. Paul E. Klopsteg, professor of applied science at Northwestern University and director of research of the Northwestern Technological Institute. Dr. Klopsteg states that it is the intention of the committee to consider the problems from the points of view of engineering, production, fitting and servicing as well as from their medical and surgical aspects. Its purpose is to make certain that veterans will be provided with the best pos-

sible prosthetic appliances that can be devised.

In considering mechanisms and parts of limbs the committee has no intention of disregarding all the good work that has been done but, rather, it will analyze objectively every meritorious device. Any new development will begin on the foundation of experience already available, as manifested in the many ingenious mechanisms now in use and in the success that has been achieved in the fitting and use of limbs by both military and civilian personnel. Another aim of the committee is to bring about as much standardization as possible in parts and mechanisms, to assure simplification of maintenance and repair.

In view of the magnitude of the task, the work being undertaken by the committee is expected to continue for many months; but it is likely that results and findings that may be immediately applicable will be released as soon as they are available. To assure the utmost utility and practicality of any developments done under the auspices of the committee, close working relationships are being established with government amputation centers in the hospitals of the armed forces.

Serving with the chairman are the following committee members: Dr. Harold Conn, surgeon in chief, Goodyear Tire & Rubber Company, Akron, Ohio; Mr. Mieth Maeser, research engineer of the United Shoe Machinery Corporation, Beverly, Mass.; Dr. Paul B. Magnuson, chairman of the Department of Bone and Joint Surgery, Northwestern University Medical School, Chicago; Dr. Robert R. McMath, director of the McMath-Hulbert Observatory of the University of Michigan; Mr. Edmond M. Wagner, chief of the engineering section of the National Defense Research Committee, Washington, D. C., and Dr. Philip Wilson, clinical professor of Orthopedic Surgery, Columbia University College of Physicians and Surgeons, New York.

Dr. Charles F. Kettering, head of General Motors Research Division, Detroit, and Dr. Roy D. McClure, chief surgeon of Henry Ford Hospital, Detroit, are consultants to the committee.

The operating headquarters of the committee are at Northwestern University, Evanston, Ill.

Rehabilitation in England

The vast scale of war injuries, not only in the fighting forces but also in civilians, in consequence of bombing from the air has produced a corresponding problem of rehabilitation. More than 250 hospitals are now using rehabilitation methods, which include physical therapy, remedial exercises, outdoor games and handicrafts. This is nearly twice as many as a year ago, when the Ministry of Health made a special appeal to civilian hospitals to establish a rehabilitation department as soon as possible. Rehabilitation is a service which aims at securing quicker and more complete recovery not only in accident cases but also in almost every form of illness and disability. Passive physical therapy, which includes heat, massage and electrotherapy, was formerly the main method of rehabilitation in most hospitals. This is largely giving place to active movements by the patients themselves. These include remedial exercises to strengthen the body generally and to restore function to the affected region, organized games to promote freedom and spontaneity of movement, and occupational therapy to give regular and gentle exercise to particular groups of muscles and to serve also as a form of mental relaxation. Lectures, discussions, musical entertainments and books provide mental stimulus during the rest periods.

Special attention is paid to the psychologic and economic aspects of the problem. The patient's full confidence and cooperation need to be secured; his personal and domestic anxieties must be allayed and, above all, if he is discharged before fit to return to work he must not be allowed to drift. The goal is complete restoration of capacity and resettlement in satisfying work. To this end close touch is maintained with the Ministry of Labor so that he may be assisted to take up suitable employment or, if necessary, to attend a vocational training center. Some hospitals have obtained the use of local halls for the expansion of their work; others have been supplied with huts for remedial exercises.

Most of the hospitals have appointed a member of the staff as a rehabilitation medical officer. Many such officers have attended special courses at selected rehabilitation centers. Lectures and demonstrations have been given by experts on the application of rehabilitation methods to various types of medical and surgical disability. Other courses have been provided for physical therapy technicians, handicraft teachers and others who are helping in this work. To help with the resettlement of disabled persons in industry, large firms have established special workshops in neighboring hospitals in which disabled employees may be restored to their working capacity by exercising the affected limbs in suitably adapted work under supervision.

Rebekah Wright

It is with regret we announce the death of Rebekah Wright. A few weeks before her death Dr. Wright, who was a pioneer in hydrotherapy was given a grant from the Baruch Committee to prepare a final book on her experiences with hydrotherapy in relation to psychiatry. Her unfortunate death prevented the completion of this task.

BOOK REVIEWS

SURGERY OF THE HAND. By *Sterling Bunnell,* M.D., Honorary Member of the American Academy of Orthopaedic Surgeons; Member of the American Association of Surgery of Trauma; American Society of Plastic and Reconstructive Surgery; Licentiate of the American Board of General Surgery and American Board of Plastic Surgery. Pp. 750 with 600 illustrations. Price, $12.00. Philadelphia: J. B. Lippincott Company, 1944.

This book was written primarily for the surgeon. It is of particular importance now because of the large number of injuries of the hand and arm resulting from war and industry. The author states, "Primarily this book is designed to treat reconstruction alone; but it has been expanded to include a little of other aspects that seemed necessary, and also along some lines where interest beckoned. An attempt has been made to keep it concise for the sake of the reader's time. Main principles have been stressed over details, as any able surgeon should improvise his own methods of operating. There are some purposeful repetitions for emphasis where the subject applied in different chapters." Whereas injuries of the hand are primarily discussed, injuries of the arm which may affect the hand, such as certain types of fractures, nerve lesions and congenital deformities and the like, have been added.

The book is divided into four parts. In part one, phylogeny, comparative anatomy and the normal hand are briefly considered. In part two, the author discusses examinations of the hand including reports, history taking, diagnosis and the like. Under general consideration he deals with operative technic, skin and flexion contractures, bones, joints, nerves and tendons. Also under this section he discusses the intrinsic muscles of the hand and methods of repairing these muscles as well as the arm in its relation to the hand, including such items as pressure on the nerves in the neck, pectoral girdle, injuries to the brachial plexus, shoulder region, elbow region and forearm. Part three, "Injuries and infections of the hand," includes consideration of open wounds, special types of wounds such as puncture wounds, contusions, abrasions, hematomas, amputations, burns and rupture of tendons. Also in this section he deals with fractures, dislocations, pyogenic infections and special infections of the hand such as syphilis, tuberculosis, tularemia, anthrax and the like. He also discusses types of injuries, prophylaxis and the care of the hand in industry. In part four, "Other conditions of the hand," he considers congenital deformities, vasomotor and trophic conditions and tumors of the hand.

The book is extremely well illustrated with excellent drawings, photographs and reproductions of roentgenograms. It is well written and well organized. At the end of each chapter is a long bibliography covering the subjects discussed. The author obviously has had extensive experience and has a wide knowledge of the field. The book undoubtedly is one of the finest books on the hand in existence and will be invaluable to any surgeon, particularly those interested in surgery of the hand.

Those interested in physical medicine may be surprised to note that the author mentions the use of physical agents only to condemn them. It appears either that he has had unfortunate experiences with the use of physical therapy or that his knowledge of its use in such conditions is limited.

HYPERTENSION AND HYPERTENSIVE DISEASE. By *William Goldring,* M.D., Associate Professor of Medicine, New York University College of Medicine; Chief, Nephritis and Hypertension Clinic, New York University Clinic; Physician to the Adult Cardiac Clinic and Associate Visiting Physician Third (New York University) Medical Division, Bellevue Hospital; Visiting Physician, Goldwater Memorial Hospital and *Herbert Chasis,* M.D., Assistant Professor of Medicine, New York University College of Medicine; Associate Chief, Nephritis and Hypertension Clinic, New York University Clinic; Physician to the Adult Cardiac Clinic and Assistant Visiting Physician Third (New York University) Medical Division, Bellevue Hospital; Cardiologist to the French Hospital. Cloth. Price, $3.50. Pp. 253. New York: The Commonwealth Fund, 1944.

This monograph is not a review of the subject with citations but a concise presentation of the authors' concepts of hypertension and hypertensive disease, the result of fifteen years of collaboration between the Department of Medicine and the Department of Physiology of New York University College of Medicine and the study of the course of hypertensive disease in 6,000 patients while they were ambulatory and during periods of hospitalization. The authors give in full detail procedures and interpretation of their pioneer investigations concerning methods of quantitative measurement of the rate of glomerular filtration, renal blood flow and tubular function in man. They give full and specific directions for making these measurements and for combining them in a new composite kidney function test for clinical use. Their discussion of treatment gives their experience with renal extracts and thiocyanate. They present for the surgeon and for the urologist a clear and concise summary of the clinical results of sympathectomy, unilateral nephrectomy

and renal omentopexy in the treatment of hypertension with a critical appraisal of the rationale and value of these surgical procedures.

As many of these cases with complications come to the department of physical medicine, physicians in charge of these departments will be specially interested in the chapter: "The management of hypertensive disease." In this chapter the authors make some interesting statements. "It appears from the foregoing discussion that medical and surgical attempts at specific treatment for hypertensive disease have proved disappointing. Perhaps the most valuable single device in the rehabilitation of the hypertensive patient is psychotherapy; the planned and detailed methods employed by the psychiatrist are not necessarily superior to repeated conferences with a sympathetic physician. Patients with uncomplicated hypertension tolerate ordinary exercise well; however, they should not exceed their tolerance and should be advised to avoid vigorous and competitive sports. In most instances it is unwise to suggest complete retirement when modification and partial curtailment are feasible."

In the treatment of the neurologic complications of cerebral hemorrhage or thrombosis, the authors say in part: "Passive movements should be started early and active movements as soon as feasible. Daily brisk massage is beneficial; electrotherapy is of doubtful value and may discourage the patient from attempting the more beneficial voluntary movements. The tendency toward muscle contraction may be corrected to some degree by the proper application of mechanical supports. . . . While the function of the hand is apt to be more seriously impaired, its grasping motion may often be retrained and even the ability to write may be restored in part. The period of re-education is long, in most instances requiring a year or more of patient effort." This book should be read by every physician treating hypertensive disease.

RADIATION AND CLIMATIC THERAPY OF CHRONIC PULMONARY DISEASES WITH SPECIAL REFERENCE TO NATURAL AND ARTIFICIAL HELIOTHERAPY, X-RAY THERAPY AND CLIMATIC THERAPY. Edited by *Edgar Mayer,* M.D., F.A.C.P., A.C.C.P., Assistant Professor of Clinical Medicine, Cornell University Medical College, New York City; Attending Physician, New York and Memorial Hospitals; Special Pulmonary Consultant, New York State Department of Labor. With the collaboration of 22 contributors. Cloth. Price, $5.00. Pp. 393 with 46 illustrations. Baltimore: Williams & Wilkins Company, 1944.

This is a concise, authoritative treatise on radiation and climatic therapy in the treatment of chronic pulmonary disease. In the first section there are chapters by Doctor Coblentz of the National Bureau of Standards on the physics of light radiation; Doctor Laurens of Tulane University School of Medicine on the physiologic action of light; and Doctor Krusen and Doctor Elkins of the Mayo Clinic on the sources of light and the modes of local and general administration.

The second section deals with artificial light therapy with important chapters on pulmonary and pleural forms of tuberculosis; laryngeal and tracheobronchial tuberculosis; intestinal and peritoneal tuberculosis and tuberculosis of the lymph nodes. The third section considers solar radiation and climatic therapy. The next section discusses roentgenotherapy and the final section considers surgical versus conservative therapy.

This book is recommended to the general practitioner because there are many patients throughout this country who could be aided by these forms of therapy. Radiation and climatic therapy in proper dosage and in properly selected cases often have turned the tide in favor of the patient.

THE ART OF RESUSCITATION. By *Paluel J. Flagg,* M.D. Cloth. Price, $5.00. Pp. 453 with 176 illustrations. New York: Reinhold Publishing Company, 1944.

The author states that this book is an attempt, based on more than twenty-five years of experience with unconscious patients, to tell the reader what to do for acutely asphyxiated patients who are about to die.

The book is arranged in six parts dealing with the fundamentals of resuscitation, asphyxia and gas therapy. It deals mainly with resuscitation as applied in the operating room, and the author has gathered the essentials of papers published on the subject of asphyxiation and resuscitation. Many illustrations, diagrams and charts are used. One chapter is devoted to methods of resuscitation. The author has covered the subject of manual and mechanical artificial respiration commonly and not so commonly used. An inventor of a device of his own, he is extremely interested in the field. He has described apparatus for administering oxygen therapy. He has expressed regret that many physicians are not fully informed on giving artificial respiration and deplores the fact that they would rather call the fire department or lay life saving crews than do the work themselves. There is a chapter on the causes of asphyxia, for example, childbirth, high altitude, carbon monoxide, submersion, anesthesia, poliomyelitis and electrocution. There are chapters on the mechanics of respiration and on the gases encountered in fire fighting.

BABY DOCTOR. By *Isaac Abt,* M.D. Cloth. Pp. 310. Price, $2.50. New York: McGraw Hill Book Company, Inc., 1944.

Doctor Abt in this autobiography relates his life and shows that this period has coincided with the development of modern pediatrics. Those who know Doctor Abt realize how much he figures in the modern history of pediatrics. His students are everywhere carrying forward his teachings. This book is interesting because it contains many of Abt's anecdotes like the following: "At one time, I decided to try the experiment of feeding children on goat's milk. Accordingly I visited an Italian settlement and bought forty or fifty ani-

mals, which I presented to the Michael Reese Hospital and set to graze on the grounds back of the hospital. A Swiss orderly not only milked the goats, but lavished care and affection upon them that a patient might have envied. The children got along well on the new diet, though not much better than on good cow's milk. But the nurses lost the properly detached, scientific attitude toward the experiment when the male goat took to chasing and butting them. Personally, I had no reason to regret my undertaking until a colleague presented my two sons with a goat. The boys arranged for this treasure to share the garage with our Stanley Steamer, and once, when someone left the hood open, he made a meal of the asbestos insulation. Luckily, he found the rest of the car inedible, but later he lunched with evident relish on the only copy of a speech I had just written for presentation at an important medical meeting. I had nothing left except my original notes, and found little to console me in the demonstration that my paper was at least digestible."

Every mother if she will read this book will appreciate how child care has developed in the last century. It should be in the library of every physician.

ANATOMY AND PHYSIOLOGY FOR STUDENTS OF PHYSIOTHERAPY OCCUPATIONAL THERAPY AND GYMNASTICS. By *C. F. V. Smout,* M.D., M.R.C.S., L.R.C.P. Senior Lecturer and Acting Professor, Department of Anatomy, University of Birmingham, Examiner to the Chartered Society of Physiotherapy and *R. J. S. McDowall,* M.D., D.Sc., Professor Physiology, University of London, King's College. Price, $8.00. Pp. 835 with 287 illustrations. Baltimore: A William Wood Book. The Williams & Wilkins Company, 1944.

Although there are many available textbooks on anatomy and physiology, there has been a definite need for one written especially for student physical therapists and occupational therapists. Instructors and students alike should welcome this book as a definite contribution towards education in this field. Three-fourths of the text is devoted to anatomy, starting with a brief chapter on histology. Remaining chapters deal with osteology, joints, fascia and muscles, nervous system, circulatory system, lymphatic system, thoracic and abdominal viscera in that order. In the description of bone anatomy the relation of the overlying muscles is repeatedly emphasized with the aid of excellent line drawings. The extensive detailed chapter on joints is commendable as so much of the practice of physical and occupational therapy is concerned with joint motion. The illustrative material includes in addition to drawings, colored plates and reproduction of roentgenograms. The important chapter on muscles is also uniformly excellent. Colored plates from the best anatomical sources are included, together with special drawings indicating function. The sections on the nervous system and viscera are satisfactory, but not as outstanding as the previous chapters. Of special interest and value are the special chapters on anatomical regions and living anatomy. In the latter, drawings are superimposed on photographs making an effective visual aid to learning topography and surface anatomy. A unique feature which is of particular value for physical and occupational therapists is the chapter on muscle action.

Although the sections of this book devoted to anatomy can wholeheartedly be recommended as excellent, the section on physiology might be found unsatisfactory by some instructors in this subject. The material presented seems sufficiently up to date and written with a style compatible for this type of student. However, it perhaps lacks the completeness required of a text in this subject and unfortunately there are no references given for additional reading. One would like to have more material included on the effects of heat and cold and ultraviolet irradiation. It would also be of value to include examples of pathologic physiology to a greater extent. The anatomical section of the book is so excellent that the text warrants high praise no matter how good the physiology section is. The latter is perhaps satisfactory for many courses, but raises the question as to the wisdom of combining these two subjects in a single textbook.

THE EXTREMITIES. By *Daniel P. Quiring,* Ph.D., *Beatrice A. Boyle, Erna L. Borousch* and *Bernardine Lufkin.* Paper, Loose Leaf. Pp. 55. Cleveland: Cleveland Clinic Foundation, 1945.

This book contains line drawing diagrams which make clear the origin, insertion, action and arterial and nerve supply of the muscles of the upper and the lower extremities together with their motor points. The plates do not attempt to show all the details of attachment, nerves and arteries, but they do emphasize the major termini of muscles and the chief arteries and the insertions. The diagrams are based on original dissections but constant references to standard anatomical texts are given. Nomenclature is based on modified B. N. A. and B. R. terminology. This is an excellent textbook for physical therapy technicians.

MANUAL OF HUMAN CROSS SECTION. ANATOMY. By *Dudley J. Morton,* M.D., Associate Professor of Anatomy, Department of Anatomy College of Physicians and Surgeons, Columbia University. Price, $6.00. Pp. 211. Cloth. Baltimore: The Williams & Wilkins Company, 1944.

This manual is intended as a teaching aid in courses of cross section anatomy. It consists of a series of black and white drawings of sections of the body including head, trunk and extremities. Opposite each section there is a list of the structures to be identified. Guide lines to these structures are included in the drawings to be labeled or numbered appropriately. Students and teachers should find this book valuable as a time saver to be used in conjunction with anatomical material or colored photographs.

CLINICAL DIAGNOSIS BY LABORATORY EXAMINATIONS. By *John A. Kolmer,* M.S., M.D., Professor of Medicine in the School of Medicine and the School of Dentistry of Temple University; Director of the Research Institute of Cutaneous Disease. First revised edition. Pp. 1239 with illustrations and charts. Price, $8.00. New York: D. Appleton-Century Company, 1944.

No branch of medicine has been more fruitful in its extraordinary contributions toward a more scientific interpretation of clinical signs and symptoms than that which is now provided by laboratory examinations. For practical usage, the question is not the abundance of data now at one's disposal in this field, but the correlation of these facts into sharply differentiated evaluations of laboratory means and methods sufficient to satisfy the need of practitioner, student, teacher and technician. While it is true that the laboratory end of clinical diagnosis has now become a tightly bound specialty in itself, it is Kolmer's conviction and rightly so, that physicians, surgeons and students could for convenience, leave the procedure or method to the technician but should share responsibility in interpretation of the results brought to light. "No clinical or laboratory examination can be better than the thoroughness and skill with which it is conducted," is a major caption in the author's thesis. This opinion perhaps could have been better rounded out by including the final essential, namely, interpretation, for without "interpretation" the dictum is as meaningless as is deglutition without eventual digestion.

Unquestionably the work (third printing, first edition) stands solidly on its own authoritative and detailed survey of a subject in mounting use by medical practitioners, pathologists, chemists, serologists, toxicologists and the like, in the clinical diagnosis of disease. The accuracy of the laboratory is presented as a modern bridge for the art and technic of the clinician or his attempt to elicit the variable data at the bedside. The assembled and orderly deductions of both provide that final judgment which often turns a good guess or clinical impression into a solid conviction. Hand in hand with the advances in knowledge of such allied subjects as biochemistry, bacteriology, serology and the like, pure science has evolved a large number of new and refined methods of great and practical value in the diagnosis of disease. The comprehensive nature of the progress in laboratory procedures and interpretations is expatiated in this volume, the detail of which is partly attested by the more than 1200 pages forming the body of this publication, not to mention the 42 pages of listed content. The term encyclopedic could well be ascribed to the text, but perhaps a more inclusive impression is that the book is a most representative and authoritative guide to every well established and laboratory procedure of value to allied and medical science.

The work is a splendid example of American scholarship, but in the interest of making thoroughship into perfectionship, the reviewer hopes that greater detail be devoted in future editions to the value of fluorescent light for diagnostic purpose as a greater aid to the interpretation of pathologic tissues and fluids. Contributions in this field have been impressive, extensive and practical and deserves recognition on their own merit.

THE THERAPY OF THE NEUROSES AND PSYCHOSES. A Socio-Psycho-Biologic Analysis and Resynthesis. By *Samuel Henry Kraines,* M.D., Associate in Psychiatry, University of Illinois, College of Medicine; Assistant State Alienist, State of Illinois; Diplomate of American Board of Psychiatry and Neurology; Captain, United States Army Medical Corps. Second Edition. Cloth. Price, $5.50. Pp. 839. Philadelphia: Lea & Febiger, 1943.

This new edition has been enlarged to include more material on schizophrenia, shock therapies, organic psychoses and neuropsychiatric conditions attributed to war. Classification of psychiatric states follows the familiar pattern, but instead of describing symptoms in the formal language of the psychiatrist, illustrative case histories are used. The symptomology of the psychoneuroses is interpreted in the light of the fundamental psychology of the individual, possible disturbance of the autonomic nervous system, the influence of sex drives and the environmental stresses to which the patient is subjected. Psychotherapy according to the author, therefore aims to remove stress, to eliminate immature traits, to substitute mature healthful reaction patterns achieving thereby a socio-psycho-biologic resynthesis. The technic of personality analysis and of retraining attitudes and reaction patterns including the use of adjurant therapy such as hypnosis and drugs is explained simply and clearly with the aid of case material. The problem of the major psychoses is dealt with rather briefly. Shock therapy including insulin, metrazol and electricity is described in full detail, however. The section on wartime neuropsychiatric conditions is a valuable addition.

This book is recommended as a useful and practical guide to the understanding and treatment of a large and important group of patients. It is a personal type of text based on the author's experience rather than a summary of the collected opinions of other writers. The general practitioner should find it especially valuable as it is written primarily for his use or that of the beginning specialist.

PHYSICAL MEDICINE ABSTRACTS

Common Mistakes in Handling of Patients With Arthritis and Allied Conditions. Bernard I. Comroe.

J. A. M. A. **127**:394 (Feb. 17) 1945.

Mistakes in the handling of arthritic patients often lead to unnecessary deformities and crippling. In some instances omission of proper therapy delays early recovery. The sedimentation rate is not infallible and, if the results of this test are not in agreement with the diagnosis, the test should be repeated. A normal sedimentation rate does not rule out organic disease. It is a mistake to tell the patient that the joint is normal because the x-ray examinations are negative. X-ray evidence of subdeltoid bursitis is present in not more than 50 per cent of cases; negative roentgenograms do not rule out subdeltoid bursitis. Between 95 and 98 per cent of all gout occurs in males. Other diseases may cause pains and aches in various joints or muscles. Angina pectoris, parkinsonism, brucellosis, trichinosis, hysteria, hypothyroidism, scleroderma, lupus erythematosus, cancer and many other nonarthritic syndromes. Patients with coronary artery occlusion may develop a painful shoulder after a few days or weeks and in some instances may have aches and pains in the hands. Pain radiating down the legs is frequently diagnosed as sciatica. Sciatica is not a disease but is merely a symptom. It is also a mistake to omit roentgen examinations of the low back in persons with persisting low back pain.

The patient with rheumatoid arthritis should not be told to go to bed for prolonged periods without proper exercise and massage. A member of the patient's family should be trained as well as possible to give massage daily in addition to periodic massage by a trained masseuse. One must carefully balance the amount of rest and exercise in an individual.

Many mistakes are made in the use of physical therapy. Physical therapy alone will not cure most cases of arthritis. On the other hand, physical therapy should never be omitted in the treatment of average arthritic patients, particularly those with subacute or chronic forms of arthritis. Joints that are acutely inflamed should not be manipulated. These should be kept at rest as much as possible.

Reconditioning for the War Wounded. Augustus Thorndike.

Am. J. Surg. **27**:394 (Feb.) 1945.

The physical training program provided for the trainees includes gymnastics, combatives, obstacle course running, games, calisthentics, swimming and marches up to fifteen miles.

Educational reconditioning for the trainee is limited to two hours per day instruction in subjects which actually constitute a refresher course in basic military training.

The occupational therapy prescribed for the trainee consists of useful activities such as painting, plumbing, gardening, carpentry and the like, work therapy for the benefit of the hospital.

Application of High Frequency Phenomena in Medicine. Harold J. Holmquest.

Quart. Bull., Northwestern Univ. M. School **19**: 41 (Spring) 1945).

It is important to consider the technic to be employed in the treatment of various conditions and to adapt the technic as regards the method of application, the intensity and duration of treatment and the frequency with which treatments are to be administered, so that such untoward effects will be obviated.

There are two methods in practice of applying high frequency power to tissue for treatment purposes: One, by means of the high frequency field such as exists between plate electrodes, with or without an air space between electrodes and the skin, and the other, by means of the high frequency magnetic field, which is set up by the high frequency current flowing through a coil which is wound around the part to be treated or wound into a flat "pan-cake" type coil and placed over the tissues in which it is desired to generate heat.

Careful investigators here and abroad seem agreed today that the only demonstrable effects of short wave diathermy are the production of heat and the physiologic effects that normally follow the production of heat in tissue.

That method of applying short wave diathermy which develops heat primarily where oxidation produces it naturally in the human body, thereby inducing and maintaining an active hyperemia and permitting the warmed circulating blood to convey heat to other tissues, would seem to be preferred method application for treatment of all conditions that might be benefited by such therapy. Experiments have been performed showing that the induction field generates heat in an electrolyte in proportion to the conductivity of the electrolyte. Such a field should produce heat dominantly in vascular tissue. Actual measurement of temperatures obtained in the deep tissues of living subjects have confirmed this theoretical deduction.

In order that the operation of short wave diathermy machines do not interfere with other services whose satisfactory operation depends on the unhindered transmission and reception of electromagnetic radiation, frequencies for medical use should be allocated. The shielding of such equipment is impractical. The frequency bands al-

located should be in the region of 10 to 15 megacycles for induction heating and 40 to 50 megacycles for electric field heating. In the opinion of the author if but one band is allocated for medical use, that band should be for induction heating, since that method of application is, according to available evidence, the preferred method.

A Study of Hallux Valgus, Its Cause and Operative Management. Part III. The Silver Procedure. Robert T. McElvenny.

Quart. Bull., Northwestern Univ. M. School 19: 23 (Spring Quart.) 1945.

The principles of the silver procedure consists of the following: 1. The plastic procedure on the joint capsule to restore normal tension between the two sides of the joint. 2. The removal of the medial side of the metatarsal head (simple exostectomy). 3. The replacement of the sesamoids in their normal relation to the metatarsal head. 4. The correction of forefoot splay. By the end of the fourth week, the great toe should be in neutral position. The splint should be removed at four weeks. The anterior foot lacing is worn for ten weeks from operation. After this, all support is removed. Three weeks after operation, these people are walking comfortably and well in their anterior lacing and splints. Four weeks after operation the splint is removed, the patient is given loose stockings and wide shoes. Physical therapy consisting of massage and soakes is instituted.

Low Back Pain From the Standpoint of the General Surgeon. John Beverly Moore.

Illinois M. J. 87:38 (Jan.) 1945.

For acute lumbosacral strain the recumbent position usually gives relief, lying on the back or the sound side with the body and thighs slightly flexed, a pillow between the knees and some form of heat to the affected part. Add to this a firm mattress and you have good treatment. The referred pain in the leg will disappear as the back improves. They should be kept in bed as long as movement causes pain. On arising, they will be more comfortable with a tight binder and should continue heat in some form. Later, stooping and bending exercises just short of inducing pain are encouraged. The majority of these cases show no roentgenographic evidences of injury.

For postural lumbosacral strains local heat gives patients most relief. The pendulous or relaxed abdominal wall should wear an abdominal support. Other postural corrections should be referred to the orthopedist.

With facet syndrome sudden pain in the lumbosacral back may be due to a slight subluxation of one or both inferior articulating processes of the fifth lumbar vertebra. These respond amazingly to manipulative measures. The procedures recommended are given in detail.

For sacroiliac strain rest on a firm mattress, some form of heat, and a sacral compression dressing is good treatment. Patients are likely to be more comfortable on the back with a pillow under and between the knees. Patients are allowed up when the upright position does not cause pain. A firm binder or belt around the pelvic girdle affords some comfort. They should continue with intermittent use of heat. The recommendations for stooping and bending exercises are the same as in lumbosacral strain.

For lumbago the treatment is heat, massage and early activity.

Brucellosis. Harold J. Harris.

Arch. Ophth. 33:61 (Jan.) 1945.

In cases of the acute illness the most valuable aid is sulfadiazine or sulfathiazole, although neither substance may be said to be actually curative. Remission is likely to occur, at which time vaccine may be employed for the purpose of building up adequate resistance. Artificial fever therapy is overrated in some quarters, for either the acute or the chronic illness. It is successful probably in only a small percentage of cases. Much of the probable error in its evaluation has been made on the basis of too hasty a decision as to recovery and of inadequate follow-up study. However, its trial is justified in selected cases, especially those in which the disease is refractory to vaccine therapy.

In intestinal localization of infection, succinylsulfathiazole or sulfaguanidine may prove to be of greatest value, especially in prevention of relapse. In treatment of the chronic illness vaccine made from the abortus strain alone has proved to be of great value. The sulfonamide compounds are usually of little value for the chronic illness except in cases of localized infections.

Muscle Injury in Industry; The Importance of Physical Medicine. Morton Smart.

Brit. J. Phys. Med. 8:8 (Jan.-Feb.) 1945.

In the postwar planning of the medical treatment of the industrial worker there is no field of activity with greater scope for improvement in the technic of treatment than that of manipulative surgery and of methods designed to maintain the physiologic activity of muscles at its maximum efficiency.

Joint disability and much crippling are the inevitable result of adhesions and of wasting of muscles, which are themselves the direct consequence of inflammation in joints from injury and other causes. If more regard were paid to the prevention of adhesions and of muscle wasting after even minor injuries, much pain and crippling would be prevented or at least mitigated.

Adhesion formation and muscular wasting, which are so constantly a serious sequel to strains and sprains of all degrees of severity, can be reduced to a minimum if such patients are treated with the end in view of maintaining the physiologic activity of the muscles at its maximum during the process of tissue repair. This can be accomplished with certainty by means of a special technic of graduated muscular contractions initiated as soon after the injury as possible. Such

treatment has passed from the transitional stage and has a well defined physiologic basis.

Sprains and fracture-sprains of the ankle joint are resistant to quick recovery. Disability is caused by persistent edema, pain on use, limitation of movement owing to adhesions and a general feeling of stiffness, particularly on commencement of movements after the joint has been at rest.

It can hardly be denied by those in a position to judge that by far the most of what may be described as minor injuries are most inadequately treated, perhaps mainly because of the lack of proper facilities. In consequence, what is generally considered to be a slight injury at the time of its occurrence ends in quite unnecessary pain and crippling and in interference with efficient work for long periods. Neglect of early treatment leads to serious loss of man hours in the industrial world, because in the later stages, when more serious tissue changes have taken place, such as atonicity and wasting of muscles and adhesions, treatment in order to restore function involves much greater loss of time and absence from work.

Rehabilitation: A New Orientation in Medicine. Lord Horder.

Brit. J. Phys. Med. 8:4 (Jan.-Feb.) 1945.

As has often been pointed out, the idea of rehabilitation is not a new one. It has always been inherent in the tradition of medicine that the work of the physician does not cease with the mere correction of the patient's disability, but only when he has done his utmost to enable the patient to function again as an active member of the community. The general plan of rehabilitation in the Emergency Medical Service is founded on the experience of the special military hospitals organized during those war years, in which all the ancillary departments that exist in the best equipped hospitals of today were represented, not excluding "curative workshops" and the provision of psychiatric help.

It has been pointed out recently that coordination of the essentials of complete rehabilitation on a national basis is still lacking. Roehampton, the Mecca of the limbless, was started as a private enterprise during the war of 1914-18 and is today controlled by the original governing body. The resthouse scheme for tired and unfit workers was started privately and is still run by a voluntary organization.

The Visionary Gleam.

(Edit.) Brit. J. Phys. Med. 8:1 (Jan.-Feb.) 1945.

We have watched rehabilitation come into view and have observed and participated in the phases through which it has passed. All the doubts, all the sneers, all the destructive criticism have been part and parcel of its rise to prominence and ultimately of its establishment as an essential.

We are still far from the end of our labors. There can be no satisfaction until we see rehabilitation made applicable to every single individual and every single occupation, no matter who the person may be or what he or she may be doing, no matter whether the readjustment is necessary in the mental or the physical sense or whether it refer to the factory, the profession, the household, the school or any other department of human activity. Rehabilitation has already begun in the factories and the main flow of physical medicine is diverted for the time being to industry. But such partial application can only be an earnest of what can yet be accomplished over the whole field of humanity, and of its potential contribution to universal happiness, so sadly lacking in the past few years.

The Relation of Physiotherapy to Plastic Surgery. J. P. Reidy.

Proc. Roy. Soc. Med. 35:705 (Oct.) 1944.

There is suggested for preoperative application, general breathing exercises to reduce anesthetic problems, as in old people; heat and massage to improve movements and circulation, in limbs about to be immobilized; in areas about to be excised, or grafted; and to soften and loosen scars prior to excision.

Heat and massage are recommended to cramped upper and lower limbs during intermediate stages of operations, chiefly concerned during the transference of a tubed pedicle to distant areas.

There is discussed purposive splinting with exercises against elastic resistance to increase range and power of movement as in burned hands; active exercises designed to restore movement, such as jaw exercises after bilateral condylectomy; restoration of function in stiff limbs following fixation in hand joints after burns and/or skin grafting. These exercises are accompanied by massage, heat, saline soaks and wax baths.

Post-War Rehabilitation and Resettlement. G. D. Kersley.

Brit. M. J. 4375:632 (Nov. 11) 1944.

Rehabilitation, the complete range of treatment continued until the fullest working capacity is restored, has received much attention. The field is vast and includes not only the treatment of injuries and rheumatism, but also planned convalescence, the prevention of breadown in health, prevocational guidance so as to ensure correct placing of labor according to physique and mental fitness, vocational training and provision for sheltered workshops.

Periarthritis of the Shoulder Joint. James M. Tarsy.

New York State J. Med. 44:2116 (Oct. 1) 1944.

Periarthritis of the shoulder, or its more descriptive synonym, "frozen shoulder" may be induced by a wide variety of surgical and medical conditions.

A more concise terminology is suggested, primary periathritis, periarthritis of uncertain origin and the term "secondary periarthritis," periarthritis of known origin, is proposed. Choice of therapy and subsequent response in primary and sec-

ondary periarthritis point to an essential causative difference between these two forms in question. In primary periarthritis recovery is best obtained by a combination of local and systemic measures. In the secondary form ruptured fibers must first be allowed to repair by rest and mobility must be reestablished by subsequent manipulation, heat, massage and other measures.

Treatment of the primary form encompasses a wide variety of therapeutic measures, including, for the debilitated patient, bed rest for a period of weeks. Treatment of hormonal inbalance is effected with estrogens or thyroid extract. Manipulation of the affected extremity, ranging from cautious stretching to full maneuverability under anesthesia, is also advised. Continuous stretching with traction apparatus appears to be the method of choice with many. Ultraviolet irradiation, removal of focal infection, and other systemic measures are also advocated.

Aside from these systemic measures, based on pathology, a noval form of therapy is here proposed. This includes injection of the specific structures involved followed by manipulation and relief of pain and spasm by block anesthesia and subsequent stretching of the affected extremity.

Block anesthesia and manipulation may be followed by a series of excellent measures advocated by Kendrick.

Light traction shouuld be applied to the arm, which is maintained in a position of 90 degrees abduction and 90 degrees external rotation. During the first twenty-four to forty-eight hours ice caps are applied to the shoulder. During the first two days following manipulation a complete range of motion is executed passively. On the third day diathermy of low intensity is employed, followed by active movements of the arm. On the fourth day active exercise of the arm by means of an "exerciser" attached to the head of the bed is instituted. This is followed by the reapplication of traction after each treatment. This traction should be used constantly during the first week. At the end of one week the patient may be allowed out of bed for short periods. During the final few days of treatment more active exercises are added, such as "wall-climbing" and placing the arm behind the head and back. After ten days to two weeks the full range of motion is persistently maintained. Finally, the patient should be kept under close observation and physical therapy and exercises should be continued until mobility and normal muscle tone are completely established.

Two forms of therapy have been employed for the treatment of this disability, injection of the specific muscular and tendinous structures involved and block anesthesia and manipulation.

The Fallacy of Massage in the Treatment of Obesity. S. William Kalb.

J. M. Soc. New Jersey 41:407 (Nov.) 1944.

Since the dawn of civilization, massage, rubbing, or pounding has been and as a means for reducing the overweight person. In recent years massage has become a common practice. Millions of people have accepted it in the hope of finding an easy way to lose weight. In 40 patients with obesity on low caloric diets, there was a loss in total body weight and a decrease in the circumference of the limb which was massaged. There was a similar decrease in the measurements of the opposite limb which was not massaged. In 20 patients with obesity, with no dietary restrictions but who received body massage, there was no loss in total body weight and no decrease in the circumference of the limb which was also massaged with a vibrating machine. General body massage or local massage by means of a vibrating machine, alone, is ineffective in decreasing total body weight or the circumference of a limb in patients with obesity.

Acute Brachial Radiculitis. J. W. Aldren Turner.

Brit. M. J. 4374:594 (Nov. 4) 1944.

The duration of the severe pain before muscle weakness first appeared has varied from a few hours to two weeks or possibly slightly longer, the usual length of time being three to four days. The severe pain tends to pass off as the weakness develops, and may be replaced by a dull ache; but in some cases severe pain has lasted for two to three weeks, although the paralysis has occurred within a few days of the onset of the pain. The onset of weakness in the majority of cases is sudden, with a maximum at the onset, but 4 patients said that the weakness had progressed over the course of two to three days.

With the lack of knowledge of the etiology, treatment can be only palliative, analgesics for the pain in the acute stage, support for paralyzed muscles to prevent stretching, active and passive exercises and electrical stimulation of the affected muscles when the painful stage has passed.

The syndrome of pain around the shoulder, followed in the course of a few days by muscular weakness and wasting and at times sensory changes, is described. The anatomical distribution of the weakness can be a single peripheral nerve, two or more spinal roots, or combinations of these. A number of apparent precipitating factors are mentioned, the most outstanding being operation for hernia in 8 of the 36 cases.

The possible etiology is discussed and an analogy drawn between this condition of acute brachial radiculitis and serum neuritis.

Treatment Activities in War Psychiatry. Lauren H. Smith.

Am. J. Psychiat. 101:308 (Nov.) 1944.

Convalescent reconditioning applies to all specialties but it is of vital importance in psychiatry not only because of its specific value in functional disabilities but also owing to the large number of such disabilities. Psychiatrists are fully aware of the value of a reconditioning program and probably are better informed than most medical officers as to how it may specificially function. At some military installations a psychiatric medical officer has been appointed as reconditioning officer. In civilian life every physician who suc-

cessfully treated psychoneuroses learned that treatment must be based on planned constructive scheduled activities. Psychotherapy was necessary, but in many cases failed to achieve results unless the work, play, rest and exercise of the patient were organized constructively along principles of good mental and physical hygiene.

The convalescent program is planned on such principles. It endeavors to build morale and to create attitudes designed to improve bodily functions or somatic disorders. It is a hand-made procedure that is a "natural" for functional disabilities. Probably to acquire optimum benefits, the psychoneurotic convalescents should be in separate groups. They also have some needs in treatment, such as group psychotherapy, which are specifically their own. For them certain extreme physical activities should be modified, or at least the tempo of increase in such activities will have to be a little slower. The additional mental reconditioning necessary for psychoneurotics might slow up the program for other groups. These special differences are now considered by psychiatric medical officers and new ways of meeting them are progressing.

Early Postoperative Walking. Superiority of Wire Sutures. James W. Nixon.

South. M. J. 37:687 (Dec.) 1944.

The advantage of annealed wire sutures are described. The advantages of early postoperative walking are illustrated. It is believed, after studying a group of 892 patients, that the use of wire sutures is not only highly satisfactory in itself but blends well with early postoperative activity. The combination of wire suture technic and early postoperative walking is demonstrated to be safe and desirable.

Treatment of Gunshot Fractures of the Extremities in Evacuation Hospitals of the U. S. S. R. Nikolai N. Priorov.

Brit. M. J. 4388:178 (Feb. 10) 1945.

In wartime the treatment of bone injuries has exceptional significance. According to data from Soviet hospitals fractures of the extremities constitute 38 per cent of all wounds encountered during the present war. If fractures of the skull, face, spine and ribs are added to this figure the total reaches 45 to 47 per cent, or almost half of all wounds incurred at the front. Correct fracture treatment must involve not only restoration of lost function but restoration of fighting capacity as well and the return of an experienced and tried soldier to the Army.

Wartime gunshot fractures have these features: They are open, compound, and complicated by infection; like closed fractures, they are accompanied by displacement of bone fragments; they are associated with extensive destruction of soft tissue, not observed in closed fractures; they are often encountered as comminuted fractures, with a large number of splinters scattered throughout the area surrounding the wound; wounded men with bone fractures are unavoidably subject to many-staged treatment in various stations and centers, beginning with field hospitals and ending in the deep rear; treatment is protracted and the results are less satisfactory than in treatment of closed fractures.

As early as possible general and specialized physical therapy, gymnastics, are used to improve the general condition of the patient and prevent debility of muscle, contractures and limitation of mobility of the joint.

Wheal-Fluorescence. A New Method of Evaluating Peripheral Vascular Diseases. Preliminary Report. James Locke Neller, and Erwin R. Schmidt.

Ann. Surg. 121:336 (March) 1945.

The purpose of this paper is to introduce a new and simple test which promises to be an accurate means of revealing certain fundamental facts of diagnostic, prognostic and therapeutic importance in cases of peripheral vascular disease.

The test consists of observing the presence or absence of fluorescence in surface scratches made fluorescent by injection of intravenous fluorescein followed by inspection under specially filtered ultraviolet light.

A new, simple and apparently reliable test for extent and degree of vascular insufficiency is introduced. Its component parts are described, and their bases in logic discussed. The equipment necessary, and the technic of performance are presented. Clinical considerations are outlined with cases to support them. It is recommended that other clinics adopt the procedure and further analyse its possibilities.

The Physical Fitness Program Needs Medical Guidance.

(Edit.) Nebraska M. J. 30:78 (March) 1945.

This is neither the time nor the place to discuss a detailed or even a skeletal program for physical fitness. There is at present, to our knowledge, no organized program, though governmental and industrial organizations, together with representatives of the American Medical Association are working toward that end. At the last Annual Conference of State Secretaries and Editors the subject received much attention. From the discussion one must conclude that there is an urgent need for the medical profession to exercise active leadership, or the whole movement will deteriorate into a universal gymnastic routine with the principal effort to train athletes regardless of individual adaptability or physiologic equipment for such an arduous career.